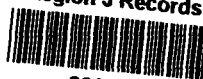


EPA Region 5 Records Ctr.



224835

**SITE ASSESSMENT REPORT
FOR
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, COOK COUNTY, ILLINOIS
TDD: S05-9802-022
PAN: 8F2201SIXX**

April 7, 1998

Prepared for:

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Emergency and Enforcement Response Branch
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Table of Contents

<u>Section</u>	<u>Page</u>
1 Introduction	1-1
2 Site Background	2-1
2.1 Site Location	2-1
2.2 Site Description	2-1
2.3 Site Hydrology/Geology	2-2
2.4 Site History	2-3
2.5 Previous Investigations/Removal Actions	2-5
3 Site Assessment	3-1
4 Analytical Results	4-1
5 Discussion of Potential Threats	5-1
6 Summary	6-1
 <u>Appendix</u>	 <u>Page</u>
Photodocumentation	A

List of Figures

<u>Figure</u>	<u>Page</u>
2-1 Site Location Map	2-9
2-2 Site Features Map- Southern Lot	2-10
2-3 Site Features Map- Northern Lot	2-11
2-4 Selected Historical Sampling Map- Southern Lot	2-12
2-5 Selected Historical Sampling Map-Northern Lot	2-13

List of Tables

<u>Table</u>	<u>Page</u>
2-1 Historical Residential Garden Plots, Off-Site Soil Analytical Results Summary	2-14
2-2 Samples X101 Through X115-A Historical On-Site Soil Analytical Results Summary	2-15
2-3 Samples X115-B Through X117 Historical On-Site Soil Analytical Results Summary	2-20
2-4 Samples X103-A Through X108-A Historical On-Site Soil Analytical Results Summary	2-25
2-5 Samples X108-B Through X119-B Historical On-Site Soil Analytical Results Summary	2-30
2-6 Samples X103-A, X106-B, X109-A, X110, and X115-A Historical On-Site Soil TCLP Metals Analytical Results Summary	2-35
2-7 Samples G103 through G105 Historical On-Site Groundwater Analytical Results Summary	2-36
2-8 Samples SAT-1 Through SAT-6 Historical On-Site Soil Analytical Results Summary	2-39
2-9 Samples X103 Through X111 Historical On-Site Soil Analytical Results Summary	2-41
2-10 Samples X112 Through X120 Historical On-Site Soil Analytical Results Summary	2-47
2-11 Samples X121 Through X129 Historical On-Site Soil Analytical Results Summary	2-54
2-12 Samples X130 Through X137 Historical On-Site Soil Analytical Results Summary	2-60
2-13 Samples X126, X128, X135, and X137 Historical On-Site Soil TCLP Metals Analytical Results Summary	2-66
2-14 Samples G101 Through G104 Historical On-Site Groundwater Analytical Results Summary	2-68

1. Introduction

The Superfund Technical Assessment and Response Team (START) of Ecology and Environment, Inc. (E & E), was tasked by the Emergency Response Branch (ERB) of the United States Environmental Protection Agency (U.S. EPA) to conduct a site assessment at the Pullman/Liquid Dynamics site in Chicago, Cook County, Illinois, under Technical Direction Document (TDD) S05-9802-022. START was tasked to review background information; evaluate threats to human health and the environment; and make recommendations and provide options to U.S. EPA as to the potential need for a removal action, further investigation, or other actions which may be prudent. The site assessment was conducted under the authority of U.S. EPA On-Scene Coordinator (OSC) Charles Gebien.

The Pullman Palace Car Company operated a former street car and luxury passenger railcar construction facility on site that included a repair shop, transfer table, blacksmith shop, lumber shed, upholstery shop, planing mill, machine shop, glass shop, and a storage area for oils and paints. Liquid Dynamics operated a former waste treatment facility on one parcel of the site formerly owned by the Pullman Palace Car Company.

2. Background

2.1 Site Location

The approximately 20-acre Pullman/Liquid Dynamics site is located in Chicago, Cook County, Illinois. The site is located in Section 23 of Township 37N and Range 14E (Figure 2-1). The site comprises two neighboring lots separated by 114th Street, an east-west street. The southern lot is 12 acres in size and is located between 114th Street to the north, 115th Street to the south, Corliss Road to the east, and Doty Street to the west. The northern lot is 8 acres in size and is located between 114th Street to the south, 113th Street to the north, Corliss Road to the east, and Doty Street to the west.

2.2 Site Description

Information regarding the history of the site was obtained from the Illinois Environmental Protection Agency (IEPA) reports, *Redevelopment Assessment for Pullman Palace Car Company* and *A Redevelopment Assessment for Pullman Palace Car Company- Liquid Dynamics, 1996*.

Adjacent Area

Sherwin-Williams once operated a large paint manufacturing plant on 115th Street, immediately south of the southern lot. Commercial properties and the I-94 (Calumet) Expressway are located east of the site; industrial properties are located north of the site; and residential housing is located west of the site.

Southern Lot

The southern lot comprises four parcels of land; 31, 32, 33, 34, and three outlots; A, B, C (Figure 2-2). The parcels and outlots are currently vacant, except outlot C, which is an active rail facility. The southern lot was once owned by the Pullman Palace Car Company.

Parcel 31, formerly owned and occupied by Liquid Dynamics, comprises 2.2 acres and is currently owned by Liacon, Incorporated. The concrete slab foundations of previously existing buildings cover approximately two-thirds of the parcel. The foundations appear to have no notable deterioration.

The remaining areas are generally covered by fill and gravel, with intermittent areas of short grasses. Trees border the parcel to the east, west, and south. The eastern portion of the parcel may have been filled with rock and gravel. Several open manholes and two empty rusted tanks were observed on the parcel.

Parcel 32 comprises 1.8 acres and is privately owned by an individual. The remnants of a cracked concrete slab foundation of a former building remain on site. The remaining portion of the parcel is generally covered by grass, although there are areas without vegetation. Random dumping has occurred on this parcel.

Parcels 33 and 34 are currently owned by Heritage Pullman Bank. The surface layer of the parcels is a mixture of sand, soil, cinders, brick, concrete, vegetation, and scrap steel. Parcel 33 comprises 2.4 acres. Trees border the parcel to the west and south. A grassy field, frequented by local children, is at the southern end of the parcel. Parcel 34 comprises approximately 2.6 acres. The parcel contains large areas surfaced with concrete. The concrete remains from former parking areas and slab foundations.

Outlot A is approximately 1 acre in size and is owned by Heritage Pullman Bank. Outlot A is well vegetated with grasses and trees. Outlot B is 2.4 acres in size and is owned by the Illinois Central Railroad. Outlot C is also owned by the Illinois Central Railroad and is part of an active railway corridor. Outlot C is approximately 0.8 acres in size.

Northern Lot

The northern lot is 9 acres in size and is privately owned (Figure 2-3). The northern lot is bordered to the west by railroad tracks. A fence separates the railroad tracks from the northern lot. No additional fencing is on the northern lot. The surface of the northern lot is comprised of overgrown vegetation, trees, remnants of structures, bare soil, rocks, cinders, brick, slag, and debris. Some pits which are filled with soil are located on the northern lot. Approximately two-thirds of the site consists of remnants of structures.

2.3 Site Hydrology/Geology

Lake Calumet is located approximately one-eighth of a mile east of the site. Lake Calumet is part of the Calumet River System. The area adjacent to the lake once consisted of extensive wetlands and shallow lakes. The Equality Formation, a shallow aquifer, once was the foundation of this formation. The shallow aquifer varies from near the ground surface in the clay deposits, to 10 feet in the fill deposits. In the late 1800s, the wetlands and shallow lakes were filled to accommodate piers and

industrial sites. The fill was slag waste from steel production, dredgings from the Calumet River, fly ash, cinders, solid industrial wastes, demolition debris, and household wastes. Historical data and sampling indicate the fill varies from 5 to 9 feet in depth. The fill has significantly altered the natural drainage.

Underlying the fill material is glacial till of the Wedron Formation. This formation consists of the Wadsworth Till (the upper deposits) and the Lemont Drift (the lower deposits). Near Lake Calumet, the Wadsworth Till is approximately 25 feet thick and the Lemont Drift is approximately 30 feet thick. Both tills consist of gray, silty clays with traces of sand and gravel. Underlying the unconsolidated material is Silurian Dolomite, at an approximate depth of 65 feet, varying with the thickness of the material.

A deeper aquifer exists in the dolomite bedrock. This aquifer is considered the primary aquifer of the region. According to a 1991 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Preliminary Assessment prepared by Ecology and Environment, Inc., many industries in the area have private wells for industrial applications. No private drinking water wells exist near or adjacent to the site in the City of Chicago. The Villages of Dolton and Calumet Park abut the southern border of the City of Chicago near the site. When contacted by Ecology and Environment, Inc., in December of 1997, neither village had private wells as a source of drinking water. Based on the following information, the groundwater can be classified as Class II groundwater standards in 35 IL Administrative Code Part 620: no potable water supply wells within the minimum setback zone; no unconsolidated sand, gravel, or sand and gravel deposits greater than 15 feet thick exist; and drinking water is supplied by the City of Chicago from Lake Michigan.

Surface runoff in the area is intercepted by storm sewers in the streets. Storm sewers in the City of Chicago flow into a combined sewer that eventually flow to the Metropolitan Sanitary District of Greater Chicago (MSD). The area is nearly flat. The groundwater flow is assumed to follow the topography to the east.

2.4 Site History

The entire site once housed the Pullman Calumet Shops of the Pullman Palace Car Co. The shops were devoted to constructing street cars and luxury passenger railcars. In the 1950s, cars and trucks began to replace rail as the predominant means of transport, and business began to decline. In 1980 the company was sold, and operations that remained at the Chicago facility were closed shortly after that time.

Southern Lot

In 1911, the Sanborn map does not show any development on Parcel 31; however, in 1938 two buildings were present. The buildings are believed to have housed offices, a store, and a shipping area. By 1950, an additional building was present, which is believed to have housed another store. The three buildings remained as of 1975, but the office building was demolished by 1987. Between 1980 and 1982, the property was transferred to Liquid Dynamics, a division of Environmental Dynamics. Liquid Dynamics operated a waste treatment facility on site and operated as a special waste hauler for industrial waste. Interfreight Transportation, under a joint agreement with Liquid Dynamics, operated a freight company. Liquid Dynamics may have used the Pullman Palace Car Co., buildings on Parcel 31 for their operations. Liquid Dynamics began operations in September 1980. Liquid Dynamics operated under a temporary permit as a hazardous waste treatment facility pursuant to the Resource Conservation and Recovery Act (RCRA). During operation, the company accepted a large variety of primarily aqueous-based waste products generated by paint, coatings, adhesives, food, health and beauty care, chemical processing, metal finishing, and other related industries.

Liquid Dynamics employed electrostatic electrolytic precipitation to treat wastewater. The electrical charge generated by the method precipitated dissolved and suspended contaminants. The resultant solids were sent to a landfill, the liquids were discharged under a permit to MSD, and the oils were sent to Marks Oil Refining of Chicago, Illinois. On July 13, 1981, Liquid Dynamics and Interfreight Transportation filed for bankruptcy. On October 12, 1982, Liquid Dynamics abandoned operations on site.

The 1911 Sanborn map depicts a large lumber pile immediately south of 114th Street on Parcel 32, and possibly extending onto Parcel 33. Later Sanborn maps, from 1938 and 1950, depict two Pullman Palace Car Co., warehouses operating on Parcel 32. These buildings housed a paint shop, a carpentry shop, and a lumber storage area. According to the Historic Pullman Foundation, this area has been vacant since the early 1970s.

Sanborn maps indicate that Parcel 33 may have been used for lumber storage in the early 1900s. Maps from 1938 and 1975 indicate the area was used for automobile parking. Parcel 34 housed a laundry facility, and perhaps a gasoline and oil storage facility. Later, as depicted in a 1938 map, only one small building of unknown utility was present. By 1950, another structure of unknown utility was constructed. By 1975, both facilities were gone.

During the operating years of the Pullman Palace Car Co., outlots A, B, and C contained industrial rail tracks. Many of the rail tracks remain, although rails on outlots B and C are now inactive

and overgrown with vegetation. These abandoned tracks were once used by the Pullman Palace Car Co., to move railroad cars around the facility and for the storage of railroad cars.

Northern Lot

A 1911 Sanborn map illustrates that the site was used for manufacturing car shops. The area was occupied by repair shops, a transfer table, a blacksmith shop, a lumber shed, an upholstery shop, a planning mill, a machine shop, a glass shop, and a storage area for paints and oils. Railroad tracks border the eastern and western sides of the property.

A 1938 Sanborn map indicates a change in the type of shops, the addition of buildings, and expansion of other buildings. In 1938, the site area was occupied by a wheel and axle shop, a blacksmith shop, a cleaning room, a dry cleaning shop, a boiler room, a brass working shop, a transfer table, an upholstery shop, a mattress and carpet factory, an equipment room, a storage room, and car shops. Additional railroad tracks were added to the west, and the eastern railroad track was reconfigured.

A 1967 aerial photograph indicates the buildings were present and were being used. In a 1977 aerial photograph, the buildings were demolished and portions of foundations remained.

2.5 Previous Investigations/Removal Actions

Southern Lot

Parcel 31 was abandoned in October 1982 by a bankrupt Liquid Dynamics. IEPA inspected the facility after the abandonment. Several thousand gallons of hazardous, flammable, corrosive, and toxic wastes were abandoned at the site. In late January 1983, IEPA learned of vandalism which occurred on the site. During the vandalism, thousands of gallons of sludge-like material were spilled onto the floor of the building. Some material seeped through a doorway at the southern end of the building. In early April 1983, the site was further vandalized. Windows were broken and office records were strewn about the floor. Community concern grew as this parcel was used as a playground for local children. An inspection by U.S. EPA personnel in late April 1983 revealed an imminent threat to public health and safety. The spillage of waste, the deteriorating condition of some waste containers, and the ease of access onto the property created the threat of exposure to toxic and corrosive materials, and of fire or explosion. Analytical results indicated high levels of trichloroethylene and dimethylnapthalene, both of which are toxic chemicals. Levels of lead, chromium, cadmium, and mercury were also elevated, as revealed by Extraction Procedure (EP) toxicity tests.

On April 23, 1983, U.S. EPA mobilized a contractor to remove hazardous waste from the site. Hazardous waste was removed from approximately 125 drums, five tank trailers, and a variety of vats

and other process equipment. Two 60,000-gallon equalization tanks containing 30,000 gallons of material composed of large amounts of organics and metals were secured and left on site. An analysis by Perland Environmental Technologies identified the material in the two equalization tanks to contain toluene, xylene, ethyl benzene, trichloroethene, tetrachloroethene, cadmium, chromium, copper, lead, and zinc. The wastestream consisted of oil, sludge, wastewater, acid waste, and a caustic slurry. The wastestream was analyzed for polychlorinated biphenyls (PCBs), dioxin, and pesticides; none were detected. On June 9, 1983, U.S. EPA and the contractor demobilized from the site.

In the summer of 1983, IEPA and the U.S. EPA Technical Assistance Team (TAT) collected soil samples from nearby residential gardens for Toxicity Characteristic Leaching Procedure (TCLP) and total metal analyses. The sample analyses revealed elevated levels of lead and chromium (Table 2-1).

In September of 1984, E & E TAT was tasked by U.S. EPA to conduct a CERCLA Screening Site Inspection. The inspection report concluded that the only hazardous waste remaining was the material in the two secured tanks.

On November 26, 1986, the site was reinspected by U.S. EPA. Some of the material from the two 60,000-gallon equalization tanks was observed on the floor; a composite sample was collected. The sample exceeded the EP toxicity limit for lead, classifying the sludge as RCRA characteristic hazardous waste.

In June 1990, the second immediate removal action was undertaken at Parcel 31, the Liquid Dynamics property. Two 55-gallon steel drums of hazardous material were allegedly transported from the Liquid Dynamics property to 1331 West Monroe Street in Chicago. The potentially responsible party (PRP) declined to remove the drums; therefore, U.S. EPA overpacked the drums and brought them to the Liquid Dynamics site.

On August 20, 1990, removal activities of the materials remaining on the floor and in the two 60,000-gallon equalization tanks began. All sludge removal activities were completed on September 24, 1990. Final removal of the wastestream was on January 29, 1992. The delay was a result of permit problems.

In October 1991, E & E TAT was tasked by U.S. EPA to conduct a CERCLA Site Inspection prioritization. Only one building remained and piles of construction and vehicular refuse were observed on the property. The migration of contaminants from the site was the suspected cause of elevated levels of lead and chromium in nearby residential gardens. This assessment resulted in a recommendation for further investigation of the Liquid Dynamics property.

In July 1994, a Phase I Environmental Site Assessment was completed by Northwest Environcon.

Inc., on part of the former Pullman Palace Car Co., property. The report was prepared for the Heritage Pullman Bank. The assessment included a site reconnaissance, records research, historical investigation, and a review of federally reported environmental information. No samples were collected. Two environmental conditions of concern were identified in the assessment. Suspected asbestos-containing material (ACM), believed to be transite siding debris remaining from the demolition of the former Pullman Palace Car Co., building, was discovered on Parcel 34.

In the fall of 1994, Environmental Restoration Systems, Inc., a U.S. EPA contractor, removed the ACM from the ground surface of Parcel 34. The ACM was found in a nonfriable state as broken transite panels spread over 11,150 square feet, on top of concrete pads. The ACM and soils were transported off site and disposed of as a special waste. Confirmatory samples of the cleared areas and adjacent soil samples detected no asbestos. During the removal activities, three pits with ACM were discovered. Two of the pits were secured by covering with poly sheeting and labeled with "Hazardous Asbestos" tape. The third pit contained a stand of cottonwood trees and soil that precluded access to the pit contents.

An Administrative Order, dated March 21, 1995, was issued to the PRPs for cost recovery of past removals.

On August 23, 1995, and on February 16, 1996, IEPA collected 30 soil samples and four groundwater samples from the Pullman/Liquid Dynamics site for a redevelopment assessment (Tables 2-2 through 2-7 and Figure 2-3).

On August 1, 1997, a site assessment was conducted on Parcels 31, 32, 33, and 34 at the Pullman/Liquid Dynamics site by E & E START, under the authority of U.S. EPA. Six soil samples were collected and analyzed for RCRA metals (Table 2-8 and Figure 2-4).

Northern Lot

In March and July 1996, IEPA representatives from the CERCLA Site Assessment Program conducted a site reconnaissance. During the reconnaissance, it was determined that the site had become a target for open dumping and apparently a tree service. Large cut logs and woodchips were present in the south-central portion of the site, off of 114th Street. Areas of stressed vegetation, spills, and other areas of contamination were noted for sampling.

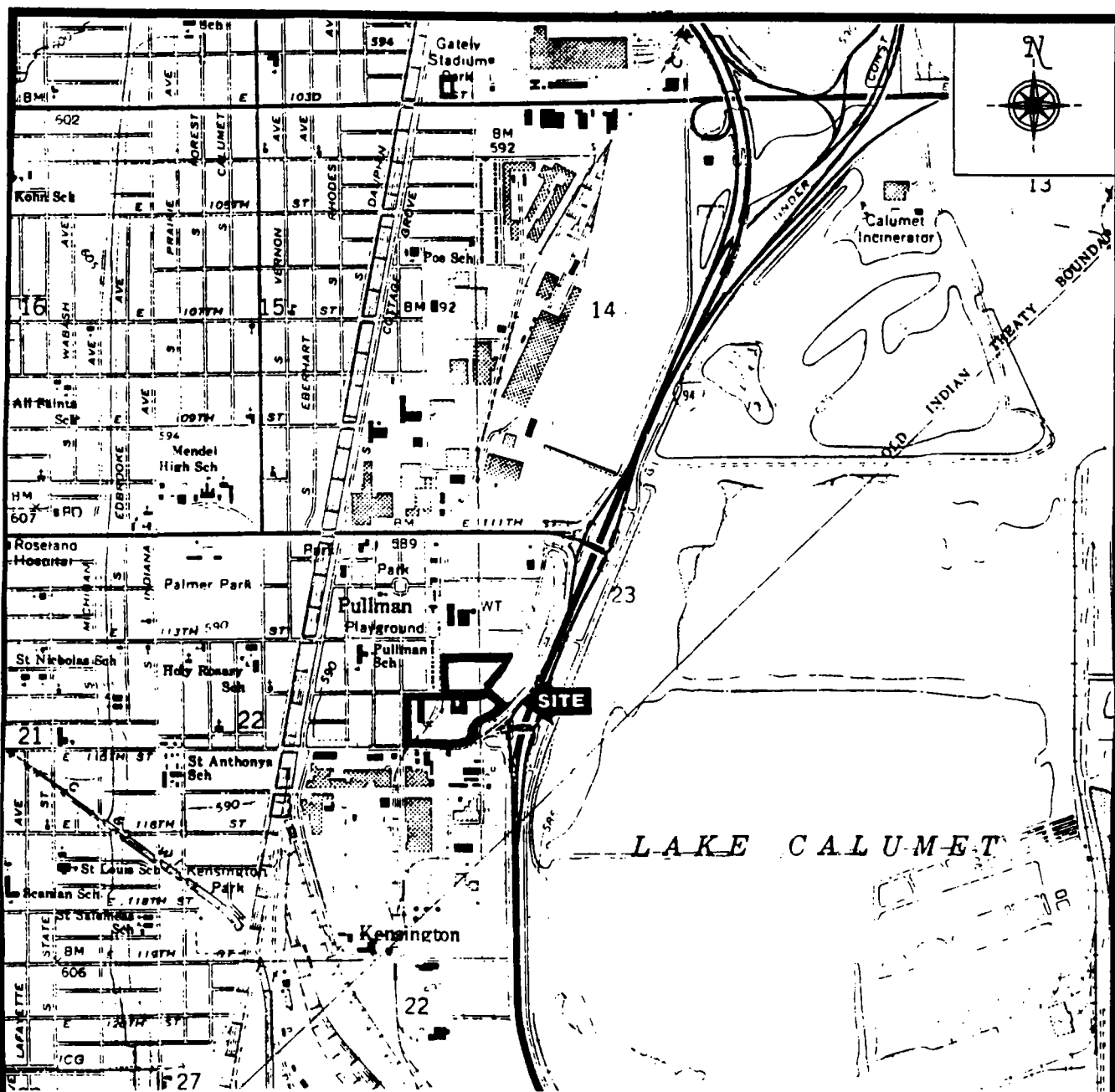
On July 9, 1996, IEPA used a geophysical metal detector to survey for the presence of metallic scrap and/or underground storage tanks. Only the eastern portion of the site was accessible with the geophysical metal detector. The remaining portion of the site was too densely vegetated and/or was covered with concrete foundations. The surveyed portion of the site was divided into two areas: northern and southern.

Minor anomalies were noted in some locations in the southern area and may have been the result of waste scrap metal near the surface. Two predominant anomalies were detected along the western border of the southern surveyed area. The objects that caused the anomalies were not determined.

Minor anomalies were also noted in some locations of the northern lot area. Evidence of dumping and the possible burying of waste was noted during the site reconnaissance. Buried railroad tracks may have also caused these anomalies.

Before sampling the soil and groundwater, a City of Chicago asbestos inspector performed a reconnaissance of the site. The inspector did not visually identify any asbestos on site. The inspector did state that asbestos was probably used around the pipes in the boiler room, in construction of the boiler room, and around pipes under the foundation. The inspector also stated that additional locations of asbestos may be on site.

On July 16 and 17, 1997, IEPA collected 35 soil samples and four groundwater samples (Tables 2-9 through 2-14 and Figure 2-5). The soil samples were analyzed for selected volatiles, semivolatiles, pesticides, and inorganics. The groundwater samples were analyzed for selected semivolatiles, pesticides, and inorganics. Four of the soil samples were analyzed for TCLP inorganics.



Quadrangle location

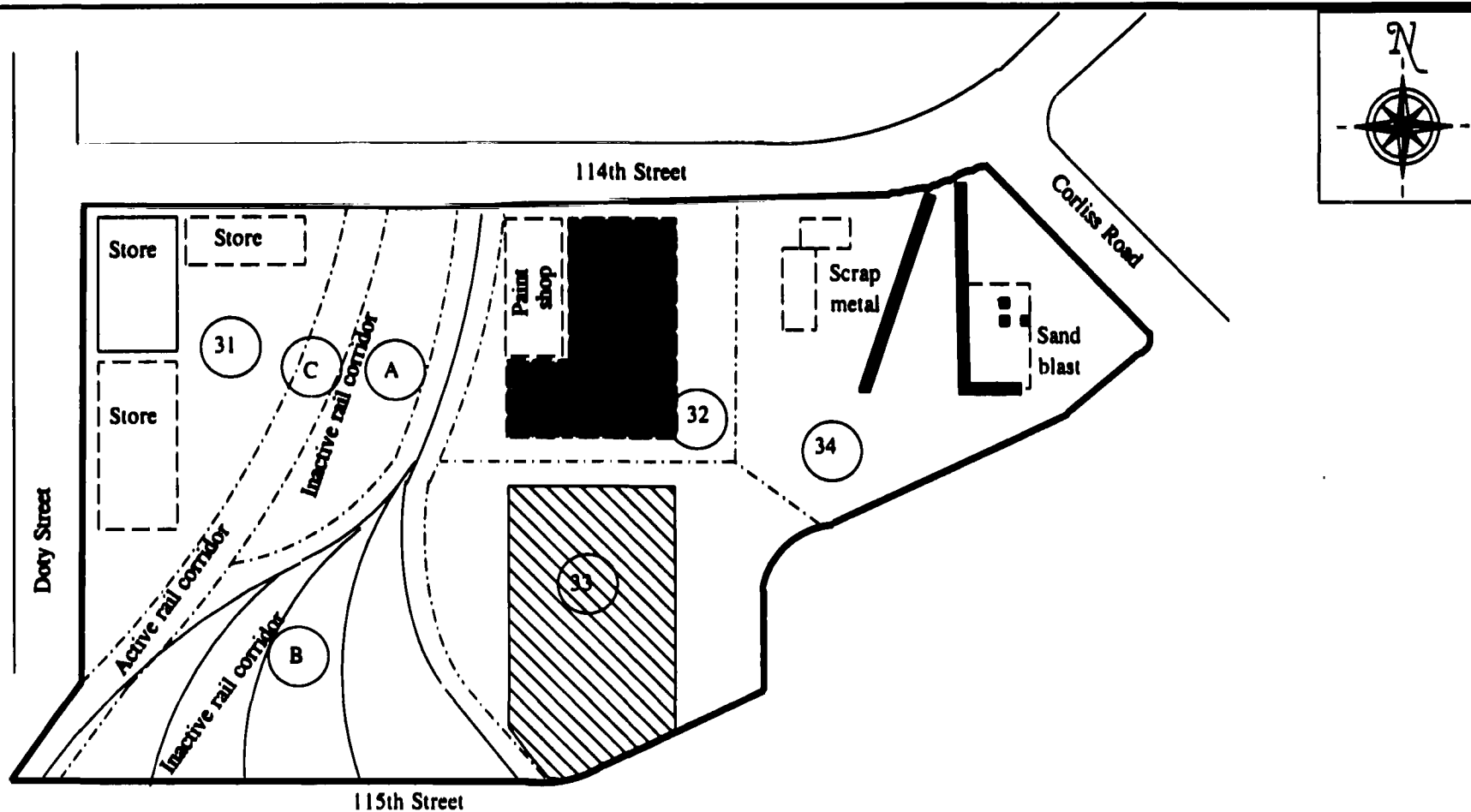


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Region 5 - Superfund Technical Assessment and Response Team

33 North Dearborn Street, Chicago, Illinois 60602

TITLE	Site Location Map	FIGURE	2-1
SITE	Pullman/Liquid Dynamics	SCALE	1:24,000
CITY	Chicago	STATE	Illinois
SOURCE	U.S.G.S. 7.5 minutes series Topographical Map, Lake Calumet Quadrangle	TDD	S05-9711-007
		DATE	1965



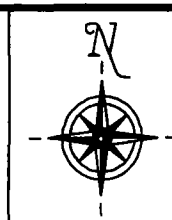
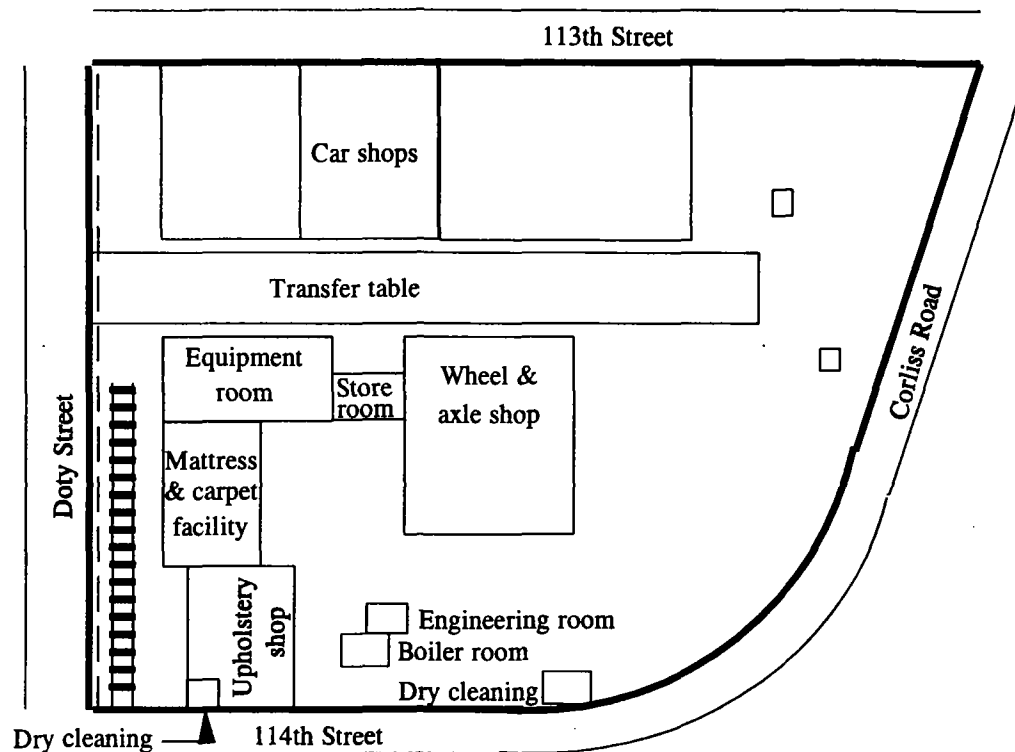
Legend

- Asbestos pit
- Property lines
- Site boundary
- - - Existing concrete foundation
- Existing building
- ▨ Former parking lot
- ▩ Former building and concrete foundation
- Parcel designation
- Service road




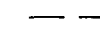
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Region 5 - Superfund Technical Assessment and Response Team
33 North Dearborn Street, Chicago, Illinois 60602

TITLE Site Features Map-Southern Lot		FIGURE 2-2
SITE Pullman/Liquid Dynamics		SCALE 1" = 200'
CITY Chicago	STATE Illinois	TDD S05-9711-007
SOURCE Ecology & Environment, Inc.		DATE December 1997



Legend

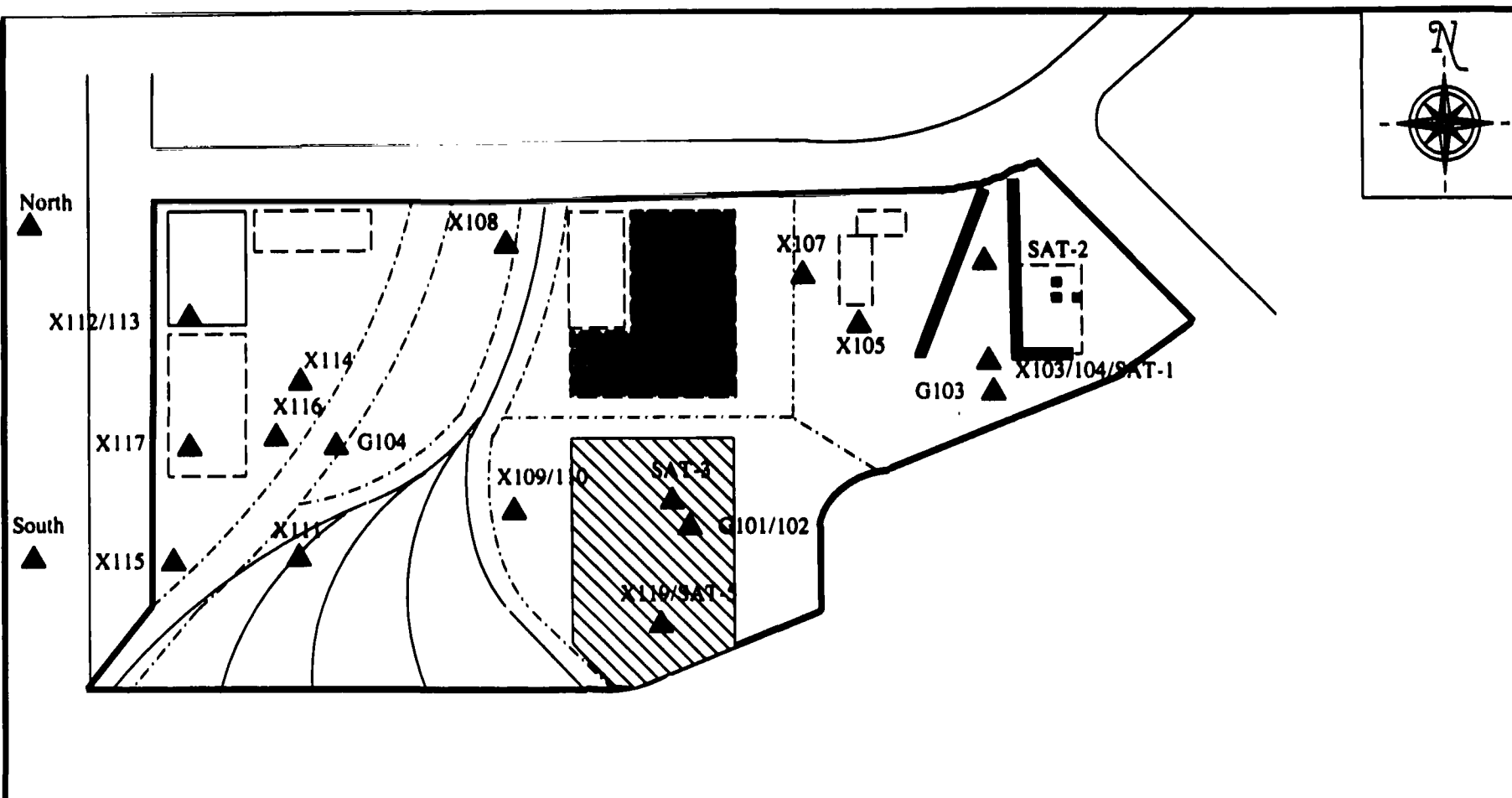
-  Site boundary
-  Railroad spur
-  Unidentified structures
-  Fence



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Region 5 - Superfund Technical Assessment and Response Team
33 North Dearborn Street, Chicago, Illinois 60602

TITLE	Site Features Map-Northern Lot	FIGURE	2-3
SITE	Pullman/Liquid Dynamics	SCALE	1" = 200'
CITY	Chicago	STATE	Illinois
SOURCE	Ecology & Environment, Inc.	TDD	S05-9711-007
		DATE	December 1997



Legend



Historic sample location

Note:

G = IEPA groundwater sample

X = IEPA soil sample

SAT = START soil sample

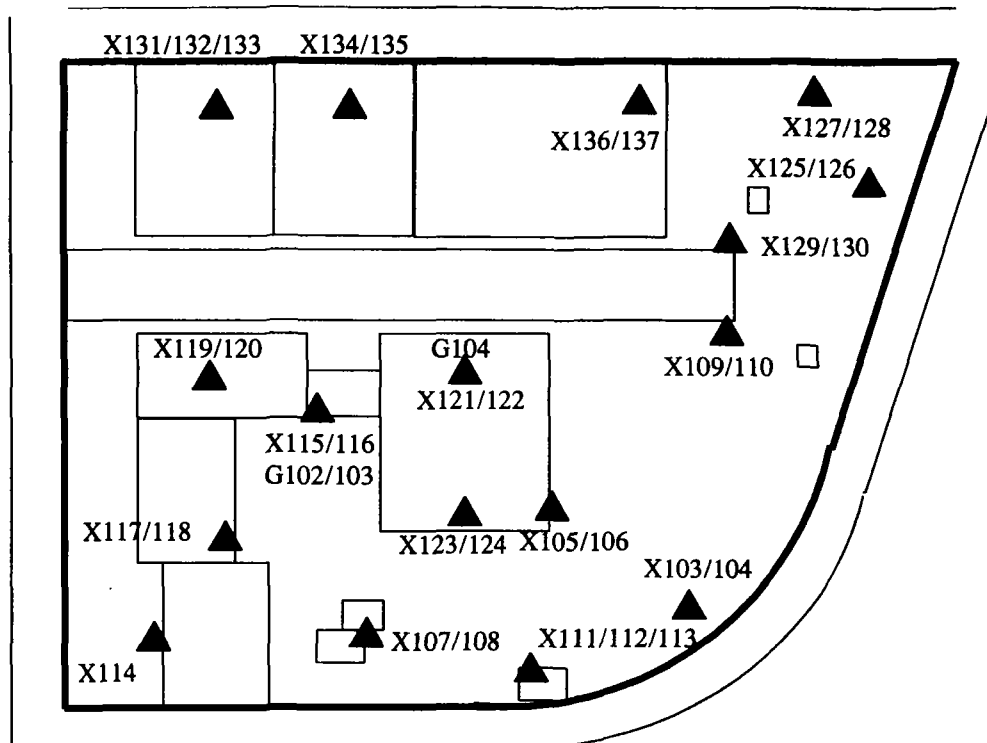
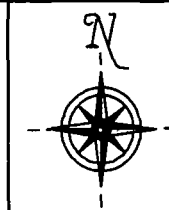
North/South = IEPA off-site samples



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33 North Dearborn Street, Chicago, Illinois 60602

TITLE	Selected Historical Sampling Map-Southern Lot	FIGURE	2-4
SITE	Pullman/Liquid Dynamics	SCALE	1" = 200'
CITY	Chicago	STATE	Illinois
SOURCE	Ecology & Environment, Inc.	TDD	S05-9711-007
		DATE	December 1997



Legend

▲ Historic sample location

Note:

G = IEPA groundwater sample

X = IEPA soil sample



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Region 5 - Superfund Technical Assessment and Response Team
33 North Dearborn Street, Chicago, Illinois 60602

TITLE	Selected Historical Sampling Map-Northern Lot	FIGURE	2-5
SITE	Pullman/Liquid Dynamics	SCALE	1" = 200'
CITY	Chicago	STATE	Illinois
SOURCE	Ecology & Environment, Inc.	TDD	S05-9711-007
		DATE	December 1997

<p>Table 2-1</p> <p>HISTORICAL RESIDENTIAL GARDEN PLOTS</p> <p>OFF-SITE SOIL ANALYTICAL RESULTS SUMMARY</p> <p>PULLMAN/LIQUID DYNAMICS SITE</p> <p>CHICAGO, ILLINOIS</p> <p>SUMMER 1993</p> <p>Units = mg/kg</p>		
Parameter	Sample Designation	
	North Garden 11403 S. Champlain	South Garden 11439 S. Champlain
Mercury	2.4	0.79
Cadmium	5.0	5.0
Chromium	37.5	53.8
Lead	1,823.8	1,897.5

Key: mg/kg = Milligrams per kilogram.

Source: Weston-Sper, 1983. *Study Design for the Investigation of Soil Contamination in Residential Garden Plots Near the Abandoned Liquid Dynamics Treatment Facility.*

Table 2-2

SAMPLES X101 THROUGH X115-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X101	X102	X112-A	X112-B	X113	X114-A	X114-B	X115-A
Depth		1-2 feet	0-9 inches	0-1.5 feet	4-5 feet	4-5 feet	0-1 foot	1-2 feet	3.5-4 feet
Volatiles									
Carbon disulfide	11	ND	ND	ND	ND	2 J	ND	ND	ND
Semivolatiles									
Diethylphthalate	520	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	88	0.590	0.790	260	0.069 J	0.130 J	7.8	37 DJ	7.8 D
Bis(2-ethylhexyl)phthalate	46	0.120 J	0.250 J	ND	ND	ND	3.7 J	4,100 D	0.26 DJ
Benzo(b)fluorathene	0.9	0.460	0.720	150	0.046 J	0.071 J	48	29 J	1.4 D
Naphthalene	3,100	ND	0.051 J	15 J	ND	ND	6.6 J	ND	0.47 DJ
2-Methylnaphthalene	NP	0.022 J	0.041 J	8.4 J	ND	ND	1.3 J	ND	0.45 DJ
Acenaphthylene	NP	ND	ND	ND	ND	ND	ND	ND	0.69 DJ
Acenaphthene	4,700	0.045 J	0.035 J	23 J	ND	ND	13 J	ND	0.36 DJ
Dibenzofuran	NP	0.024 J	0.034 J	17 J	ND	ND	7.2 J	ND	0.48 J
Fluorene	3,100	0.041 J	0.036 J	48 J	ND	ND	11 J	ND	0.37 DJ
Pentachlorophenol	3	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	NP	0.550 B	0.680 B	420	0.071 J	0.190 J	120	27 J	8 DB
Anthracene	23,000	0.120 J	0.110 J	72 J	ND	0.032 J	24	ND	1.3

Table 2-2

SAMPLES X101 THROUGH X115-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X101	X102	X112-A	X112-B	X113	X114-A	X114-B	X115-A
Carbazole	32	0.082 J	0.065 J	6.4 J	ND	ND	ND	ND	0.079 J
Di-n-butylphthalate	100	0.024 J	0.049 J	ND	ND	ND	ND	ND	0.079 J
Fluoranthene	3,100	0.810 B	0.970 B	380	0.098 J	0.250 J	150	64 DJ	13 BD
Pyrene	2,300	0.830	1.3 B	61	0.150 J	0.280 J	160	43 J	15 D
Butylbenzylphthalate	530	ND	0.043 J	ND	ND	ND	1.2 J	ND	ND
Benzo(a)anthracene	0.9	0.440	0.660	220	0.062 J	0.12 J	66	28 J	14 D
Benzo(k)fluoranthene	9	0.410	0.830	180	0.046 J	0.13 J	78	25 J	5.9 D
Benzo(a)pyrene	0.09	0.600	0.740 B	240	0.057 J	0.13 J	7	3.1 J	6.7 D
Indeno(1,2,3-cd)pyrene	0.9	0.250 J	0.430 BJ	130	ND	68 J	45 B	ND	4.2 D
Dibenz(a,h)anthracene	0.09	0.150 J	ND	79 BJ	ND	0.023 J	14 BJ	ND	1.5
Benzo(g,h,i)perylene	NP	0.790	0.470 B	190 B	0.034 J	0.089 J	3.6 B	ND	4.2 D
Pesticides									
Alpha-BHC	0.002	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC	NP	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC	NP	ND	ND	0.0082 JP	ND	ND	0.0021 JP	0.004 P	0.005 J
Gamma-BHC	0.03	ND	ND	ND	ND	ND	0.016 DJP	ND	ND
Heptachlor	0.1	ND	ND	0.130 DJP	ND	ND	ND	ND	ND

Table 2-2

SAMPLES X101 THROUGH X115-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X101	X102	X112-A	X112-B	X113	X114-A	X114-B	X115-A
Aldrin	0.04	0.0021 JP	0.0043 JP	ND	ND	0.0019 J	0.044 P	0.032 P	0.043 P
Heptachlor epoxide	0.07	0.0059 JP	0.015 JP	0.870 P	ND	0.0025 P	0.310 P	0.260 DP	0.130
Endosulfan I	470	ND	0.0055 JP	ND	ND	0.0018 JP	0.013 P	0.042 DP	ND
Dieldrin	0.04	ND	ND	0.230 DJP	ND	ND	0.023 P	0.025 P	ND
4,4'-DDE	2	1.3 D	0.170	0.160 P	ND	7.9E-3 JP	0.068 P	0.047 P	0.010 JP
Endrin	23	ND	0.017 J	ND	ND	ND	0.0046 JP	ND	ND
4,4'-DDD	3	0.040 P	0.0036 JP	ND	ND	ND	0.039 P	0.026 P	ND
Endosulfan sulfate	NP	0.026 P	0.013 JP	0.065 P	ND	0.0029 JP	0.032 P	0.050 P	0.029 JP
4,4'-DDT	2	0.930 D	0.120	ND	ND	0.0054 P	0.100	0.190 D	0.031 JP
Methoxychlor	390	0.013 JP	ND	0.980	ND	ND	0.270 DJ	0.240 P	ND
Endrin ketone	NP	0.0031 JP	0.0072 JP	0.290 P	ND	0.001 JP	0.069 P	0.100 DP	0.044 P
Endrin aldehyde	NP	ND	ND	ND	ND	ND	ND	ND	0.010 J
Alpha-chlordane	0.5	ND	0.0051 JP	ND	ND	0.017 JP	0.012 P	0.039 DP	ND
Gamma-chlordane	0.5	ND	0.0038 JP	0.074 DJP	ND	ND	0.19 DJP	0.0072 P	0.005 JP
Inorganics									
Aluminum	NP	8,700	9,990	7,860	8,710	7,530	8,890	8,230	5,220
Antimony	31	0.63 B	0.91 B	0.85 B	ND	ND	0.5 B	0.57 B	4.2 B

Table 2-2

SAMPLES X101 THROUGH X115-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMIC'S SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X101	X102	X112-A	X112-B	X113	X114-A	X114-B	X115-A
Arsenic	0.4	10.1	50.1	16.6	4.2	4.3	6.2	5.5	20.8
Barium	5,500	446	558	384	51.4	38.8	292	218	1,500
Beryllium	0.1	0.76 B	0.93 B	1.9	0.46 B	0.39 B	1.3	1.4	1.1 B
Cadmium	39	0.61 B	2	2.4	ND	ND	0.93 B	0.75 B	3.1
Calcium	NP	31,800	13,200	16,800	59,200	79,700	72,200	81,100	16,900
Chromium	140	19.1	24.9	18.9	14.2	12.5	26.1	15.6	54.9
Cobalt	4,700	7.8 B	8.8 B	10.5 B	5.8 B	5.7 B	4.3 B	3.3 B	6.3 B
Copper	2,900	49.3	77.8	109	21.1	18.3	56.1	49.4	169
Iron	NP	19,400	21,900	28,300	14,300	13,500	17,900	15,000	53,300
Lead	400	186	425	1,170	22.1	8.4	280	201	1,540
Magnesium	NP	17,100	7,390	6,770	27,600	26,500	30,600	32,100	3,960
Manganese	3,900	373	378	541	253	330	837	1,020	662
Mercury	7	0.24	0.41	1.9	ND	ND	0.54	0.39	1.2
Nickel	1,600	23.9	27.9	26.2	19.2	19	17.6	14.7	30.4
Potassium	NP	1,560	2,050	1,390	2,420	1,940	1,710	1,350	879 B
Selenium	390	1.9	3.2	0.0015	0.0011 B	ND	1.3	1.7	4.1

Table 2-2

**SAMPLES X101 THROUGH X115-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996**

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X101	X102	X112-A	X112-B	X113	X114-A	X114-B	X115-A
Silver	390	ND	0.18 B	0.18 B	ND	ND	0.25 B	0.16 B	0.35 B
Sodium	NP	300 B	341	1,710	374 B	340 B	817 B	719 B	841 B
Thallium	6	ND	0.96 B	ND	ND	ND	ND	ND	1.2 B
Vanadium	550	19.5	23.6	33.6	16.8	14.4	20.9	12	21.4
Cyanide	1,600	0.6 U	0.66 U	ND	ND	ND	ND	ND	1.5
Zinc	23,000	158	221	872	47.4	37.8	245	186	2,050

Key:

mg/kg	=	Milligram per kilogram.
ND	=	Analyte was not detected.
B	=	Analyte was detected in associated blank.
J	=	Estimated value.
P	=	A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.
D	=	Identified analyte in analysis has been diluted.
Cleanup objective	=	Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.
NP	=	Cleanup objective not provided or not calculated.
<div style="border: 1px solid black; width: 20px; height: 10px; display: inline-block;"></div>	=	Shaded value represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency.

Table 2-3

SAMPLES X115-B THROUGH X117
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation			
		X115-B	X116-A	X116-B	X117
Depth		6 feet	0.1 foot	3.3-5 feet	0.4 inches
Volatiles					
Carbon disulfide	11	ND	ND	ND	ND
Semivolatiles					
Diethylphthalate	520	ND	ND	0.030 J	ND
Chrysene	88	1.8 D	61 J	0.036 J	2.5
Bis(2-ethylhexyl)phthalate	46	0.077 DJ	8.6 J	ND	0.150 J
Benzo(b)fluoranthene	0.9	3.6 D	66 BJ	0.037 J	3.2
Naphthalene	3,100	0.092 J	ND	ND	0.080 J
2-Methylnaphthalene	NP	0.076 J	ND	ND	0.082 J
Acenaphthylene	NP	0.100 DJ	ND	ND	ND
Acenaphthene	4,700	0.100 DJ	6.4 J	ND	0.260 J
Dibenzofuran	NP	0.071 DJ	ND	ND	0.180 J
Fluorene	3,100	0.100 DJ	6.2 J	ND	0.320 J
Pentachlorophenol	3	ND	30 J	ND	ND
Phenanthrene	NP	1.4 B	82	0.038 J	3.6 B
Anthracene	23,000	0.48	22 J	ND	1

Table 2-3

SAMPLES X115-B THROUGH X117
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation			
		X115-B	X116-A	X116-B	X117
Carbazole	32	0.22 DJ	14 J	ND	0.3 J
Di-n-butylphthalate	100	0.041 DJ	ND	ND	0.043 J
Fluorathene	3,100	4 BD	120	0.065 J	6 B
Pyrene	2,300	2.7 D	120	0.069 J	3.9
Butylbenzylphthalate	530	0.041 DJ	ND	ND	0.130 J
Benzo(a)anthracene	0.9	2.6	68 J	0.028 J	3.8
Benzo(k)fluoranthene	9	2 D	35 J	0.035 J	1.9
Benzo(a)pyrene	0.09	2.5 D	66 BJ	0.037 J	3
Indeno(1,2,3 cd)pyrene	0.9	1.1 D	70 BJ	0.025 J	1.7
Dibenz(a,h)anthracene	0.09	0.450 DJ	25 BJ	ND	0.690 J
Benzo(g,h,i)perylene	NP	1.1 D	72 B	0.027 J	1.8
Pesticides					
Alpha-BHC	0.002	ND	0.0011 JP	ND	ND
Beta-BHC	NP	ND	0.0053 JP	ND	ND
Delta-BHC	NP	0.0033 JP	0.0033 JP	ND	0.0017 JP
Gamma-BHC	0.03	ND	ND	ND	ND
Heptachlor	0.1	0.003 JP	ND	ND	ND

Table 2-3

SAMPLES X115-B THROUGH X117
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation			
		X115-B	X116-A	X116-B	X117
Aldrin	0.04	0.0085 JP	0.029 P	0.0012 J	0.017 P
Heptachlor epoxide	0.07	0.039 P	0.095 DP	0.0018 JP	0.061
Endosulfan I	470	ND	0.0052 JP	0.0013 JP	0.030 P
Dieldrin	0.04	ND	0.0059 J	ND	ND
4,4' DDE	2	0.010 JP	0.022 P	0.0044 JP	0.180
Endrin	23	ND	ND	ND	ND
4,4' DDD	3	0.003 JP	0.012 JP	ND	0.055 P
Endosulfan sulfate	NP	0.015 J	0.019 P	0.00062 JP	0.018 JP
4,4' DDT	2	0.018 JP	0.020 P	0.0016 J	0.240
Methoxychlor	390	ND	ND	ND	ND
Endrin ketone	NP	0.013 JP	0.026 P	0.00079 JP	0.022 JP
Endrin aldehyde	NP	ND	0.0049 JP	ND	ND
Alpha-chlordane	0.5	ND	0.030 DJP	0.0012 JP	0.027 P
Gamma-chlordane	0.5	0.006 JP	0.0045 JP	ND	0.020 P
Inorganics					
Aluminum	NP	6,650	6,330	12,300	8,460
Antimony	31	ND	3.1 B	ND	ND

Table 2-3

SAMPLES X115-B THROUGH X117
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation			
		X115-B	X116-A	X116-B	X117
Arsenic	0.4	8.9	18	6	8.3
Barium	5,500	152	562	49.5	141
Beryllium	0.1	0.52 B	0.90 B	0.65 B	1 B
Cadmium	39	0.43 B	0.86 B	ND	0.73 B
Calcium	NP	71,600	21,100	30,800	72,700
Chromium	140	18.6	70.4	18.3	19.3
Cobalt	4,700	7.2 B	9.7 B	8.9 B	9.9 B
Copper	2,900	38.2	142	19	45.6
Iron	NP	19,500	49,100	19,300	16,900
Lead	400	188	987	11.4	223
Magnesium	NP	14,100	2,200	19,800	33,700
Manganese	3,900	271	842	369	740
Mercury	7	ND	41	ND	0.20
Nickel	1,600	23.3	21	24.8	21.4
Potassium	NP	1,410	776 B	2,480	1,520
Selenium	390	1.3	3.2	1.3	1.4
Silver	390	0.20 B	0.19 B	ND	ND

Table 2-3

**SAMPLES X115-B THROUGH X117
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996**

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation			
		X115-B	X116-A	X116-B	X117
Sodium	NP	407 B	543 B	364 B	628 B
Thallium	6	ND	ND	ND	ND
Vanadium	550	15.2	27.1	23.3	18.8
Cyanide	1,600	ND	ND	ND	1.4
Zinc	23,000	268	363	39.7	226

Key:

- mg/kg = Milligram per kilogram
- ND = Analyte was not detected.
- B = Analyte was detected in associated blank.
- J = Estimated value.
- P = A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.
- D = Identified analyte in analysis has been diluted.
- Cleanup objective = Cleanup objectives were taken from IEPA's Tiered Approach to Cleanup Objectives Guidance Document
- NP = Cleanup objective not provided or not calculated.
- = Shaded area represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency.

Table 2-4

SAMPLES X103-A THROUGH X108-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103-A	X103-B	X104	X105-A	X105-B	X106-A	X106-B	X107	X108-A
Depth		1-2 feet	3 feet	3 feet	0-1 foot	3-4 feet	1-1.5 feet	5 feet	1-2 feet	1-2 feet
Volatiles										
Acetone	62,000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	17	ND	ND	ND	ND	ND	ND	ND	0.002 J	ND
Semivolatiles										
Nitrobenzene	10	ND	ND	ND	ND	0.023 J	ND	ND	ND	ND
Isophrone	3,400	ND	ND	ND	ND	ND	0.025 J	ND	ND	ND
Chrysene	780	0.750	0.3 J	1	0.220 J	1.2	0.290 J	0.690	1.2	0.160 J
Bis(2-ethylhexyl)phthalate	210	0.027 J	ND	ND	0.037 J	ND	ND	ND	0.032 J	ND
Benzo(b)fluorathene	8	0.520	0.270 J	1.2 B	0.081 J	0.98	0.160 J	0.930 B	0.960	0.170 J
Naphthalene	8,200	0.350 J	0.052 J	0.130 J	0.065 J	0.750	0.072 J	0.078 J	0.160 J	0.028 J
2-Methylnaphthalene	NP	0.290 J	0.078 J	0.180 J	0.082 J	1.6	0.081 J	0.079 J	0.180 J	0.053 J
Acenaphthylene	NP	0.020 J	ND	ND	0.023 J	0.031 J	ND	0.033 J	0.022 J	ND
Acenaphthene	120,000	ND	ND	0.220 J	0.057 J	0.031 J	0.029 J	0.046 J	0.130 J	ND

Table 2-4

SAMPLES X103-A THROUGH X108-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLEMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103-A	X103-B	X104	X105-A	X105-B	X106-A	X106-B	X107	X108-A
Dibenzofuran	NP	0.071 J	0.029 J	0.200 J	0.260 J	0.230 J	0.220 J	0.083 J	0.200 J	ND
Fluorene	82,000	ND	ND	0.230 J	0.040 J	ND	ND	0.094 J	0.150 J	ND
Phenanthrene	NP	1.2 B	0.250 J	2.2	2.3 B	1.6 B	1.1	1.5	2 B	0.055 J
Anthracene	610,000	0.29 J	0.055 J	0.45	0.180 J	0.27 J	0.05 J	0.19 J	0.29 J	0.019 J
Carbazole	290	ND	ND	0.33 J	0.081 J	0.087 J	0.029 J	0.140 J	0.160 J	ND
Di-n butylphthalate	100	0.034 J	0.074 J	ND	ND	0.024 J	ND	ND	ND	0.039 J
Fluoranthene	82,000	1 B	0.25 J	2.1	0.38 BJ	2.6 B	0.22 J	1.6	1.7 B	0.069 J
Pyrene	61,000	1.6	0.27 J	1.7	0.34 BJ	2.3	0.6	1.3	2 B	0.069 J
Butylbenzylphthalate	530	ND	ND	ND	ND	ND	ND	ND	0.022 J	ND
Benzo(a)anthracene	8	0.550	0.21 J	1.5	0.17 J	1.2	0.22 J	0.8	0.93	0.1 J
Benzo(k)fluoranthene	78	0.37 J	0.36 J	0.54 B	0.068 J	0.94	0.12 J	0.36 BJ	0.99	0.2 J
Benzo(a)pyrene	0.8	0.57	0.28 BJ	0.75 B	ND	1.1	0.19 J	0.47 B	0.71 B	0.15 BJ
Indeno(1,2,3-cd)pyrene	8	0.38 J	0.21 BJ	0.35 BJ	ND	0.51	0.3 J	0.28 BJ	0.75 B	ND
Dibenz(a,h)anthracene	0.8	0.18 J	0.13 J	0.2 J	ND	0.29 J	0.21 J	0.15 J	ND	0.063 J
Benzo(g,h,i)perylene	NP	0.57	0.25 BJ	0.41 BJ	ND	0.61	0.41 J	0.36 BJ	0.47 B	ND

Table 2-4

SAMPLES X103-A THROUGH X108-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103-A	X103-B	X104	X105-A	X105-B	X106-A	X106-B	X107	X108-A
4-Methylphenol	NP	0.032 J	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	4,100	0.047 J	ND	ND	ND	ND	ND	0.031 J	0.023 J	ND
Pesticides										
Beta-BHC	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC	NP	ND	0.00026 JP	ND	0.00024 JP	ND	0.001 JP	ND	ND	ND
Heptachlor	0.5	ND	ND	ND	0.00024 JP	ND	ND	ND	ND	ND
Aldrin	0.3	0.016 JP	0.0053	0.0018 DJP	0.013 P	0.034 P	0.0063 JP	ND	0.022 P	ND
Heptachlor epoxide	0.6	0.018 P	0.0077 P	0.005 P	0.0095 JP	0.059 P	0.011 P	0.017 J	0.026 P	ND
Endosulfan I	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	0.4	ND	ND	ND	ND	ND	ND	0.0048 JP	ND	0.0016 JP
4,4'-DDE	17	0.009 JP	0.0025 JP	0.0015 JP	0.0094 JP	0.041 P	0.007 JP	0.0037 JP	0.021 JP	ND
Endrin	61	ND	ND	ND	ND	ND	ND	0.0037 JP	ND	ND
4,4'-DDD	24	ND	ND	ND	ND	ND	ND	ND	0.0089 JP	ND
Endosulfan sulfate	NP	0.013 JP	0.0032 JP	0.00093 JP	0.0026 JP	0.0048 JP	0.003 JP	ND	0.0066 JP	0.0025 JP
4,4'-DDT	17	ND	ND	ND	ND	ND	0.0033 JP	ND	ND	ND

Table 2-4
SAMPLES X103-A THROUGH X108-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103-A	X103-B	X104	X105-A	X105-B	X106-A	X106-B	X107	X108-A
Methoxychlor	1,000	0.11 J	ND	0.011 J	ND	ND	ND	0.026 JP	ND	ND
Endrin ketone	NP	0.041 P	0.009 DJ	0.0033 J	0.0091 JP	0.031 JP	0.0045 JP	0.0098 JP	0.027 JP	0.0021 JP
Endrin aldehyde	NP	ND	ND	ND	0.0066 JP	ND	ND	ND	ND	ND
Alpha chlordane	4	ND	ND	ND	ND	ND	ND	0.003 JP	ND	0.0016 JP
Gamma chlordane	4	0.0061 JP	0.0018 JP	0.00091 JP	0.0036 JP	0.0059 JP	ND	0.003 JP	0.0022 JP	0.00077 JP
Inorganics										
Aluminum	NP	4,950	5,210	6,800	6,890	7,380	5,920	5,030	10,100	3,870
Antimony	82	265	26.3	23.1	1.9 B	8.5 B	6.6 B	344	1.6 B	1.1 B
Arsenic	3	28.9	11.6	11.4	8.5	20.1	2.9	52	3.4	9.7
Barium	14,000	2,550	309	322	411	3,460	135	3,470	139	43.1
Beryllium	1	1.5	1 B	1.3	3	2	1.4	1 B	2.4	0.28 B
Cadmium	100	33.2	3.4	3.1	ND	5.6	0.71 B	6.9	0.19 B	0.75 B
Calcium	NP	5,530	8,760	11,800	4,820	8,350	2,470	32,200	10,600	16,800
Chromium	230	89.8	19.9	23.9	16.3	71.9	11.2	252	13.9	11.8
Cobalt	12,000	6.6 B	6.4 B	7.3 B	6.8 B	10.6 B	8.2 B	12 B	9.1 B	6.4 B
Copper	7,600	1,070	279	254	138	419	380	3,410	182	111
Iron	NP	86,900	28,800	38,900	38,600	51,600	387,700	133,000	38,800	19,900
Lead	400	39,500	1,780	2,520	698	4,210	787	26,000	479	47.5
Magnesium	NP	1,590	1,310	1,830	451 B	745	367 B	7,410	623 B	9,350

Table 2-4

**SAMPLES X103-A THROUGH X108-A
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996**

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103-A	X103-B	X104	X105-A	X105-B	X106-A	X106-B	X107	X108-A
Manganese	6,700	421	227	270	211	3,020	197	1,360	216	426
Mercury	61	0.78	0.55	0.44	0.21	0.64	ND	2.1	0.14	0.19
Nickel	4,100	36	24.7	27.6	15.1	24.8	20.4	51.7	18	11
Potassium	NP	705 B	744 B	1,060 B	494 B	810 B	323 B	1,230	1,200	428 B
Selenium	1,000	5.1	2.9	2.9	2.6	4	2.1	4.3	2.3	2
Silver	1,000	1.9 B	0.46 B	0.84 B	0.34 B	0.48 B	ND	19.9	ND	ND
Sodium	NP	858 B	578 B	620 B	410 B	617	340 B	1,670	479 B	483 B
Thallium	160	2.1 B	ND	ND	0.93 B	ND	ND	2.6	ND	ND
Vanadium	1,400	11.1 B	20.4	24.2	38	36.1	24.6	17.4	33.9	28.1
Cyanide	4,100	ND	0.78	ND	ND	ND	ND	1.6	ND	ND
Zinc	61,000	3,650	829	798	120	514	336	6,670	91	808

Key:

mg/kg

= Milligram per kilogram.

ND

= Analyte was not detected.

B

= Analyte was detected in associated blank.

J

= Estimated value.

P

= A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.

Cleanup Objective

= Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.

NP

= Cleanup objective not provided or not calculated.



= Shaded area represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency.

Table 2-5

SAMPLES X108-B THROUGH X119-B
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X108-B	X109-A	X109-B	X110	X111-A	X111-B	X118	X119-A	X119-B
Depth		7 feet	1-2 feet	4-5 feet	4-5 feet	0-1 feet	3-5-4 feet	2-3 feet	0-1 foot	3-4 feet
Volatiles										
Acetone	62,000	0.058	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1	ND	ND	ND	ND	ND	ND	ND	ND	0.002 J
Tetrachlorethene	17	ND	ND	ND	ND	ND	ND	0.002 J	ND	ND
Semivolatiles										
Nitrobenzene	10	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophrone	3,400	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	780	0.027 J	290	3.8	6.9	0.210 J	0.45	51 D	0.088 J	0.058 J
Bis(2-ethylhexyl)phthalate	210	0.045 J	ND	ND	ND	0.033 J	0.022 J	ND	0.026 J	ND
Benzo(b)fluorathene	8	0.064 J	180	2.3	5.3	0.18 J	0.3 J	59 D	0.14 J	ND
Naphthalene	8,200	ND	17 J	1.3	2.2	0.052 J	0.090 J	2.4 DJ	0.047 J	0.030 J
2-Methylnaphthalene	NP	ND	4.2 J	0.69 J	1.4 J	0.056 J	0.1 J	2.2 J	0.068 J	0.083 J
Acenaphthylene	NP	13 J	0.15 J	0.59 J	ND	ND	ND	ND	ND	ND
Acenaphthene	120,000	ND	ND	0.54 J	1.5 J	ND	ND	4 J	ND	ND
Dibenzofuran	NP	ND	ND	0.670 J	2 J	0.051 J	0.054 J	1.8 J	0.025 J	ND
Fluorene	82,000	ND	4.7 J	1.1 J	3.9 J	ND	0.039 J	3.4 J	ND	ND

Table 2-5

SAMPLES X108-B THROUGH X119-B
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X108-B	X109-A	X109-B	X110	X111-A	X111-B	X118	X119-A	X119-B
Phenanthrene	NP	ND	100	8.8	20	0.16 BJ	0.4 BJ	34	0.29 BJ	0.45
Anthracene	610,000	ND	30 J	1.9	5.5	ND	0.066 J	11 DJ	ND	ND
Carbazole	290	ND	9.1 J	0.32 J	0.97 J	ND	ND	6.7 DJ	ND	ND
Di-n-butylphthalate	100	ND	ND	ND	ND	ND	0.029 J	ND	ND	ND
Fluorathene	82,000	ND	190	3.6	13	ND	0.37 BJ	68 D	ND	0.064 J
Pyrene	61,000	ND	390	8.1	21	0.26 BJ	0.47 B	96	ND	0.069 J
Butylbenzylphthalate	530	ND	ND	ND	ND	ND	ND	0.7 J	0.025 J	ND
Benzo(a)anthracene	8	ND	230	3.1	6.5	0.11 J	0.27 J	41 D	0.072 J	0.044 J
Benzo(k)fluoranthene	78	ND	250	1.7	3.5 J	0.11 J	0.27 J	45 D	0.035 J	0.12 BJ
Benzo(a)pyrene	0.8	ND	350 B	2.2	5.5	ND	0.29 BJ	53 B	ND	0.16 BJ
Indeno(1,2,3-cd)pyrene	8	ND	330 B	2.4	3 J	ND	ND	79 B	ND	ND
Dibenz(a,h)anthracene	0.8	ND	190 B	1.6	1.5 J	ND	ND	31 B	ND	0.064 J
Benzo(g,h,i)perylene	NP	ND	350 B	3.3	3.6	ND	ND	47 BD	ND	ND
4-Methylphenol	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	4,100	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides										
Beta-BHC	NP	ND	0.03 DJP	ND	ND	ND	ND	ND	ND	ND

Table 2-5

SAMPLES X108-B THROUGH X119-B
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X108-B	X109-A	X109-B	X110	X111-A	X111-B	X118	X119-A	X119-B
Delta BHC	NP	ND	0.0038 JP	ND	ND	0.00042 JP	ND	0.0019 JP	0.00082 JP	ND
Heptachlor	0.5	ND	ND	ND	ND	ND	ND	ND	0.0011 JP	ND
Aldrin	0.3	ND	ND	ND	ND	0.0041 P	0.0041	0.0071 JP	0.005 P	ND
Heptachlor epoxide	0.6	ND	0.3 P	ND	0.077 P	0.0077	0.0076	0.034	0.0044 P	ND
Endosulfan I	1,200	ND	ND	ND	ND	ND	0.0018 JP	0.02 P	ND	ND
Dieldrin	0.4	ND	0.15	ND	ND	ND	ND	0.0097 JP	ND	ND
4,4' DDE	17	ND	0.1 P	ND	ND	0.0022 JP	0.0035 JP	0.018 JP	0.010 P	ND
Endrin	61	ND	ND	ND	ND	0.0013 JP	0.0022 J	ND	ND	ND
4,4' DDD	24	ND	ND	ND	ND	0.0013 JP	0.00076 JP	0.0051 JP	0.0014 JP	ND
Endosulfan sulfate	NP	ND	0.0023 P	ND	ND	0.0029 JP	0.0018 JP	0.00532 JP	0.0054 P	ND
4,4' DDT	17	ND	ND	ND	ND	0.0031 J	ND	ND	0.0081	ND
Methoxychlor	1,000	ND	0.99	ND	ND	ND	ND	0.07 JP	ND	ND
Endrin ketone	NP	0.00082 JP	0.29 P	D	0.030 J	0.0061 P	0.01 P	0.044 P	0.0069 P	ND
Endrin aldehyde	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
Alpha chlordane	4	ND	0.140 DP	0.034 JP	0.035 JP	ND	0.0017 JP	0.018 P	ND	ND
Gamma chlordane	4	ND	0.019 P	ND	ND	0.00077 JP	0.00089 JP	0.017 P	0.0013 JP	ND
Inorganics										
Aluminum	NP	6,740	2,170	9,810	4,270	7,970	9,040	5,900	14,600	10,100

Table 2-5

SAMPLES X108-B THROUGH X119-B
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLEMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X108-B	X109-A	X109-B	X110	X111-A	X111-B	X118	X119-A	X119-B
Antimony	82	ND	23	2.4 B	15.9 B	ND	ND	2.2 B	1.4 B	0.48 B
Arsenic	3	7.4	98.5	18.8	55.5	7.7	16.4	6.8	17.8	13.2
Barium	14,000	43.5 B	1,010	352	662	42.3 B	54.9	180	623	482
Beryllium	1	0.44 B	0.54 B	0.86 B	0.63 B	0.45 B	0.53 B	0.54 B	3.8	3.3
Cadmium	100	0.16 B	12.9	8	17.8	ND	ND	1.2	0.58 B	0.25 B
Calcium	NP	37,100	12,100	31,400	37,500	74,000	53,000	76,200	19,800	14,400
Chromium	230	12.7	49.1	45.3	86.2	14.8	16.6	22.2	21.3	10.7
Cobalt	12,000	8 B	2.2 B	14.8 B	15.5 B	6.9 B	11.7 B	3.7 B	10.4 B	9.2 B
Copper	7,600	156	6,300	820	1,515	26.1	27.3	97.7	1,290	56.6
Iron	NP	23,000	25,100	50,500	116,000	167,000	24,200	14,700	33,400	33,000
Lead	400	102	20,900	3,530	10,300	24.2	14	1,940	132	74.2
Magnesium	NP	18,700	5,710	16,000	5,590	40,200	22,100	25,700	1,360	689 B
Manganese	6,700	350	203	423	485	289	401	380	423	344
Mercury	61	0.49	3	4.6	2.6	ND	ND	0.89	0.17	ND
Nickel	4,100	22.3	51.9	56.1	68.6	22.7	28.8	23.9	36.8	25.2
Potassium	NP	1,490	268 B	2,080	822 B	2,020	2,040	897 B	1,920	1,050 B
Selenium	1,000	1.5	2.9	4.3	5.5	1.1 B	1.1 B	0.98 B	1.6	1.9

Table 2-5

SAMPLES X108-B THROUGH X119-B
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
AUGUST 23, 1995, AND FEBRUARY 16, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X108-B	X109-A	X109-B	X110	X111-A	X111-B	X118	X119-A	X119-B
Silver	1,000	ND	13.5	0.98 B	2.9 B	ND	ND	4.0	2.1 B	0.87 B
Sodium	NP	405 B	1,060 B	860 B	1,340	395 B	425 B	718 B	1,890	1,210
Thallium	160	ND	0.0014 B	ND	ND	ND	ND	ND	ND	ND
Vanadium	1,400	14.8	11 B	23.5	10.8 B	15.3	19.3	13.8	37.7	28
Cyanide	4,100	ND	0.83	ND	ND	ND	ND	1.4	ND	ND
Zinc	61,000	315	6,900	3,400	8,780	54.4	51.4	363	368	316

Key:

mg/kg	=	Milligram per kilogram.
ND	=	Analyte was not detected.
B	=	Analyte was detected in associated blank.
J	=	Estimated value.
P	=	A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.
D	=	Identified analyte in analysis has been diluted.
Cleanup Objective	=	Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.
NP	=	Cleanup objective not provided or not calculated.
<div style="border: 1px solid black; width: 20px; height: 10px; display: inline-block;"></div>	=	Shaded area represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency

Table 2-6							
SAMPLES X103-A, X106-B, X109-A, X110, and X115-A							
HISTORICAL ON-SITE SOIL TCLP METALS ANALYTICAL RESULTS SUMMARY							
PULLMAN/LIQUID DYNAMICS SITE							
AUGUST 22, 1995, AND FEBRUARY 16, 1996							
Units = mg/L							
Parameter	TCLP Cleanup Objective	Toxicity Characteristic	Sample Designation				
			X103-A	X106-B	X109-A	X110	X115-A
TCLP Metals							
Arsenic	0.2	5	ND	ND	0.002	0.013	ND
Barium	2	100	1.2	2	0.79	0.810	0.35
Cadmium	0.05	1	0.015	0.067	0.3	ND	0.006
Chromium	1	5	0.01	ND	0.009	ND	ND
Lead	0.1	5	3.8	25.5	160	2.6	0.39
Mercury	0.01	0.2	ND	ND	ND	ND	ND
Selenium	0.05	1	ND	ND	ND	ND	ND
Silver	0.05	5	ND	ND	ND	ND	ND

Key:

mg/L = Milligram per liter.
 ND = Analyte was not detected.
 TCLP = Toxicity Characteristic Leaching Procedure.

Source: Illinois Environmental Protection Agency.

Table 2-7						
SAMPLES G103 THROUGH G105						
HISTORICAL ON-SITE GROUNDWATER ANALYTICAL RESULTS SUMMARY						
PULLMAN/LIQUID DYNAMICS SITE						
AUGUST 23, 1995, AND FEBRUARY 16, 1996						
Units = mg/L.						
Parameter	Groundwater Cleanup Objective	Sample Designation				
		G101	G102	G103	G104	G105
Volatiles						
Acetone	0.7	ND	ND	ND	0.017	ND
2-Butanone	NP	ND	ND	ND	0.004 J	ND
Semi-volatiles						
Phenol	0.1	0.003 J	ND	ND	0.004 J	ND
Diethylphthalate	5.6	0.001 J	0.0005 J	0.0006 J	0.002 J	ND
Bis(2-ethylhexyl)phthalate	0.06	0.001 J	0.002 J	0.001 J	ND	ND
Di-n-butylphthalate	3.5	ND	ND	0.0007 J	ND	ND
Metals						
Aluminum	NP	0.125 B	0.123 B	0.145 B	0.185 B	0.092 B
Antimony	NP	0.0066 B	0.0023 B	0.0047 B	0.0023 B	ND
Arsenic	0.2	ND	ND	ND	0.0027 B	ND
Barium	2	0.223	0.215	0.0762 B	0.0716 B	0.0014 B
Cadmium	0.05	0.0016 B	0.00095 B	0.00099 B	ND	ND
Calcium	NP	94.9	94.3	121	250	0.023, 2 B
Chromium	1	0.156 E	ND	0.0013 BE	0.0011 BE	ND
Cobalt	1	0.0026 B	0.001 B	0.0019 B	0.0028 B	ND

Table 2-7

**SAMPLES G103 THROUGH G105
HISTORICAL ON-SITE GROUNDWATER ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
AUGUST 23, 1995, AND FEBRUARY 16, 1996**

Units = mg/L

Parameter	Groundwater Cleanup Objective	Sample Designation				
		G101	G102	G103	G104	G105
Copper	0.65	0.0145 B	0.0041 B	0.0453	0.0047 B	0.00073 B
Iron	5	0.831 E	1.32 E	4.55 E	0.0922 B	ND
Lead	0.00751	0.006	ND	0.0497	ND	ND
Magnesium	NP	23.3	21.7	21.3	80.4	0.0183 B
Manganese	10	0.46	0.406	0.203	1.24	0.00031 B
Mercury	0.01	ND	ND	ND	ND	ND
Nickel	2	0.0836	0.0238 B	0.0335 B	0.0228 B	ND
Potassium	NP	3.56 BE	3.38 BE	4.46 BE	7.88	0.849 BE
Selenium	0.05	ND	ND	ND	ND	ND
Silver	NP	ND	ND	ND	ND	ND
Sodium	NP	10.9 E	10.1 E	9.51 E	52.2 E	0.896 BE
Thallium	0.02	ND	ND	ND	ND	ND
Vandium	NP	0.0013 B	ND	ND	ND	ND
Cyanide	0.6	ND	ND	ND	ND	ND
Zinc	10	0.744	1.09	0.768	0.0084 B	ND

Key:

mg/L	■	Milligram per liter.
ND	■	Analyte was not detected.
NP	■	Not provided in groundwater cleanup objectives or not calculated.
B	■	Analyte was detected in associated blank.
J	■	Estimated value.
E	■	Indicates that the reported value is estimated because of the presence of interferences.

Source: Illinois Environmental Protection Agency.

Table 2-8

**SAMPLES SAT-1 THROUGH SAT-6
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
AUGUST 1, 1997**

Units = mg/kg

Parameter	Sample Designation					
	SAT-1	SAT-2	SAT-3	SAT-4	SAT-5	SAT-6
Metals						
Arsenic	0.019	ND	ND	0.32	1.1	0.36
Barium	0.160	0.180	0.540	0.035	0.650	0.063
Cadmium	1.1	0.71	2	0.81	2.8	ND
Chromium	55	86	ND	ND	3.3	ND
Lead	240	68	540	43	400	16
Mercury	ND	ND	ND	0.19	ND	0.45
Selenium	ND	ND	0.37	0.36	0.84	ND
Silver	ND	ND	ND	ND	ND	ND
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ND	ND	1.4	ND	ND	ND
Pyrene	10	ND	0.22	ND	ND	2
Benzo(a)anthracene	0.3	0.089	0.17	0.21	0.31	1
Chrysene	0.29	ND	0.18	ND	ND	1
Benzo(b)fluoranthene	0.39	0.1	0.12	0.19	0.2	0.92
Benzo(k)fluoranthene	0.18	0.051	0.058	ND	0.15	0.5

Table 2-8
SAMPLES SAT-1 THROUGH SAT-6
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMICS SITE
AUGUST 1, 1997

Units = mg/kg

Parameter	Sample Designation					
	SAT-1	SAT-2	SAT-3	SAT-4	SAT-5	SAT-6
Benzo(a)pyrene	0.31	0.13	0.097	0.26	0.21	1.3
Indeno(1,2,3-cd)pyrene	0.29	0.11	0.084	ND	ND	0.74
Dibenzo(a,h)anthracene	0.081	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.62	0.24	0.19	ND	ND	1.4

Key:

- mg/kg = Milligram per kilogram.
- ND = Analyte was not detected.
- NP = Cleanup objective not provided or not calculated.

Source: American Environmental Network, Schaumburg, Illinois, under analytical TDD S05-9707-012.

Table 2-9

SAMPLES X103 THROUGH X111
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103	X104	X105	X106	X107	X108	X109	X110	X111
Depth		1 foot	4.5 feet	5 feet	7.8-8 feet	1.5 feet	3.5 feet	0-6 inches	2-3 feet	1 foot
Volatiles										
Acetone	16	0.14	ND	0.087	0.008 J	ND	0.05	0.012	0.027	0.043
Carbon disulfide	9	0.004 J	0.002 J	ND	0.002 J	0.003 J	ND	0.001 J	0.009 J	0.004 J
Methylene chloride	0.2	0.056 B	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.54	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	10	0.002 J	ND	ND	ND	0.004 J	0.008 J	0.005 J	0.005 J	0.004 J
Carbon tetrachloride	0.35	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.3	ND	ND	0.03	0.015	ND	ND	ND	ND	ND
Tetrachloroethene	0.3	0.019	0.036	1.1 D	0.51 DB	0.006 J	0.010 J	ND	ND	0.210
1,1,2,2-Tetrachloroethane	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	19	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	30	ND	0.003 J	ND	ND	ND	ND	ND	ND	ND
Xylene	190	ND	0.001 J	ND	ND	ND	0.004 J	ND	ND	ND

Table 2-9
SAMPLES X103 THROUGH X111
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103	X104	X105	X106	X107	X108	X109	X110	X111
Semivolatiles										
Phenol	100	ND	ND	ND	ND	ND	0.028 J	ND	ND	ND
2-Methylphenol	15	ND	0.058 J	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	NP	ND	0.13 J	ND	ND	ND	0.038 J	ND	ND	ND
2,4-Dimethylphenol	9	0.13 J	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	0.1	ND	ND	0.110 J	ND	ND	ND	ND	ND	ND
Chrysene	780	0.43	1.5	0.046 J	0.069 J	0.26 J	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	410	ND	ND	0.03 J	0.072 J	0.039 J	0.031 J	ND	ND	ND
Benzo(b)fluorathene	8	ND	0.560	ND	ND	0.140 J	ND	ND	ND	ND
Napthalene	130	0.064 J	0.25 J	ND	0.36 J	0.19 J	ND	0.19 J	0.17 J	ND
2-Methylnaphthalene	145	0.19 J	0.51 ND	ND	ND	0.33 J	ND	0.27 J	0.22 J	ND
Acenaphthylene	75	ND	ND	ND	ND	0.032 J	ND	0.12 J	0.17 J	ND
Acenaphthene	2,800	0.13 J	ND	ND	ND	ND	ND	0.2 J	0.068 J	ND
Dibenzofuran	NP	0.27 J	0.12 J	0.38 J	0.15 J	0.097 J	0.13 J	0.25 J	0.19 J	ND
Fluorene	2,800	0.065 J	ND	ND	ND	ND	ND	0.13 J	0.049 J	0.13 J
4-Nitroaniline	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 2-9

SAMPLES X103 THROUGH X111
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103	X104	X105	X106	X107	X108	X109	X110	X111
N-nitrosodiphenylamine	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	700	1.4	1.1	ND	0.42 J	ND	ND	ND	ND	ND
Anthracene	60,000	0.19 J	0.13 J	0.059 J	0.05 J	0.045 J	0.1 J	ND	ND	0.38 J
Carbazole	290	ND	0.032 J	ND	ND	ND	ND	ND	0.13 J	ND
Di-n-butylphthalate	2,300	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorathene	21,000	0.56	0.52	0.068 J	0.1 J	0.28 J	ND	ND	ND	ND
Pyrene	21,000	0.7	0.56	0.12 J	0.15 J	0.26 J	ND	ND	ND	ND
Benzo(a)anthracene	8	0.34 J	0.57	0.046 J	0.057 J	0.16	ND	ND	ND	ND
Benzo(k)fluoranthene	78	ND	0.24 J	ND	ND	0.13 J	ND	ND	ND	ND
Benzo(a)pyrene	0.8	0.19 J	0.3 J	ND	ND	0.15 J	0.22 J	ND	ND	ND
Indeno(1,2,3-cd)pyrene	8	ND	0.18 J	ND	ND	0.084 J	0.16 J	ND	ND	0.35 J
Dibenz(a,h)anthracene	0.8	ND	0.2 J	ND	ND	ND	0.21 J	0.19 J	ND	ND
Benzo(g,h,i)perylene	16,000	ND	0.35 JB	ND	0.026 J	0.1 J	0.36 J	0.37 B	0.47 B	0.34 JB
Pesticides										
Alpha-BHC	0.0025	ND	ND	ND	0.00083 JP	ND	ND	ND	ND	ND
Beta-BHC	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND

**SAMPLES X103 THROUGH X111
HISTORICAL, ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996**

Units = mg/kg

[illegible]

Table 2-9

SAMPLES X103 THROUGH X111
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103	X104	X105	X106	X107	X108	X109	X110	X111
Gamma-chlordane	4	0.0034	0.0033	0.00055 J	0.00019 JP	0.00065 JP	0.003 P	0.0023 P	0.0022	0.002
Inorganics										
pH		6.9	7.7	5.2	5.5	7.7	7.3	6.1	7.1	6.3
Aluminum	NP	4,140	6,240	6,910	8,140	5,160	5,110	5,520	7,850	6,800
Antimony	pH based	3.1 B	3.1 B	ND	ND	3.4 B	ND	10.9 B	17.7	8.2 B
Arsenic	24	13.3	4.8	4.8	16.8	13.8	9.1	18.9	4.6	24.2
Barium	pH based	71.4	569	390	1,020	202	43.5 B	703	796	592
Beryllium	8.2	0.9 JB	1.4	2.3	3.0	1.5	0.8 JB	1.2	1.6	2.0
Cadmium	pH based	ND	ND	ND	2.5	ND	ND	5.0	3.8	0.62 JB
Chromium	420	14.8	17.3	15.3	17.8	14.1	12.1	55.0	47.1	26.5
Cobalt	12,000	15.1	5.0 B	12.3 B	12.5 B	10.7 B	12.7	9.4 B	10.3 B	8.0 B
Copper	pH based	91.6	41.3	304	297	136	35	1,430	597	270
Iron	pH based	61,000	44,000	35,000	31,600	45,600	21,000	47,800	43,200	59,100
Lead	647	82.4 J	615 J	1,740 J	3,580 J	494 J	26.9 J	2,750 J	35 J	2,240 J
Magnesium	NP	1,930	433	769 B	1,050 B	3,320	11,100	2,390	4,260	2,310
Manganese	8,700	173 J	71.7 J	316 J	275 J	256 J	252 J	357 J	428 J	250 J

Table 2-9
SAMPLES X103 THROUGH X111
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X103	X104	X105	X106	X107	X108	X109	X110	X111
Mercury	0.99	0.08 B	ND	1.5	0.31	1.8	0.10 B	3.7	0.92	1.0
Nickel	pH based	25	12.5	14.9	22.7	22.1	24.1	29.4	28.6	20.3
Selenium	pH based	4.3 J	1.8 J	1.7 J	ND	2.0 J	1.6 J	1.2 J	ND	1.9 J
Silver	1,000	0.78 JB	1.1 JB	2.8 J	3.3 JB	1.5 JB	ND	1.2 JB	1.4 JB	1.2 JB
Thallium	pH based	1.7 B	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	1,400	34.3	43.4	42.9	46.4	30.7	17.8	30.1	34.1	33.7
Cyanide	pH based	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	pH based	112 J	126 J	250 J	1,060 J	294 J	94.9 J	1,880 J	1,120 J	395 J

Key

mg/kg

ND

B

J

P

D

E

Cleanup Objective

NP



= Milligram per kilogram

= Analyte was not detected

= Analyte was detected in associated blank.

= Estimated value

= A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported

= Identified analyte in analysis has been diluted.

= Compound exceeds the calibration range of the instrument.

= Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.

= Not provided in cleanup objective or not calculated.

= Shaded area represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency.

Table 2-10

SAMPLES X112 THROUGH X120
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X112	X113	X114	X115	X116	X117	X118	X119	X120
Depth		1 foot	3.5 feet	1.5 feet	1 foot	2 feet	1 foot	6-6.5 feet	1-1.5 feet	5 feet
Volatiles										
Acetone	16	ND	ND	ND	0.013	0.025	0.01 J	ND	ND	ND
Carbon disulfide	9	0.007 J	ND	ND	0.004 J	0.008 J	0.003 J	ND	0.002 J	0.006 J
Methylene chloride	0.2	ND	ND	ND	ND	0.05 B	ND	ND	ND	ND
Chloroform	0.54	ND	ND	ND	ND	0.034	ND	ND	ND	ND
1,2-Dichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	10	0.004 J	0.004 J	ND	0.002 J	0.003 J	0.002 J	ND	ND	ND
Carbon tetrachloride	0.35	ND	ND	ND	0.004 J	0.006 J	ND	ND	ND	ND
Trichloroethene	0.3	ND	ND	0.045 J	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.3	0.28 E	0.27 E	2.2	0.009 J	0.004 J	0.002 J	ND	0.003 J	ND
1,1,2,2-Tetrachloroethane	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	19	ND	ND	ND	ND	0.001 J	ND	ND	ND	ND

Table 2-10

SAMPLES X112 THROUGH X120
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X112	X113	X114	X115	X116	X117	X118	X119	X120
Toluene	30	ND	ND	ND	0.004 J	0.005 J	0.003 J	ND	0.007 J	0.004 J
Xylene	190	ND	0.001 J	ND	ND	0.004 J	0.002 J	ND	0.003 J	0.002 J
Semivolatiles										
Phenol	100	ND	ND	ND	ND	ND	ND	ND	ND	ND
2 Methylphenol	15	ND	ND	ND	ND	ND	ND	ND	ND	ND
4 Methylphenol	NP	ND	ND	ND	ND	0.044 J	ND	ND	ND	ND
2,4 Dimethylphenol	9	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	780	ND	0.097 J	0.063 J	ND	0.35 J	ND	0.096 J	0.085 J	ND
Bis(2 ethylhexyl)phthalate	410	ND	0.04 J	0.062 J	ND	0.1 J	ND	ND	ND	ND
Benzo(b)fluoranthene	8	ND	0.073 J	ND	ND	0.099 J	ND	0.1 J	0.078 J	ND
Naphthalene	130	0.15 J	0.019 J	0.31 J	0.32 J	ND	0.023 J	ND	ND	ND
2 Methylnaphthalene	145	0.23 J	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	75	0.088 J	ND	ND	0.16 J	ND	0.028 J	ND	ND	ND

Table 2-10

SAMPLES X112 THROUGH X120
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X112	X113	X114	X115	X116	X117	X118	X119	X120
Acenaphthene	2,800	ND	ND	ND	0.057 J	ND	ND	ND	ND	ND
Dibenzofuran	NP	0.24 J	ND	0.26 J	0.18 J	ND	ND	ND	ND	ND
Fluorene	2,800	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-nitrosodiphenylamine	1	ND	ND	ND	ND	ND	ND	ND	0.024 J	ND
Phenanthrene	700	ND	0.16 J	ND	ND	ND	ND	0.049 J	0.086 J	ND
Anthracene	60,000	0.22 J	0.029 J	0.035 J	0.25 J	0.18 J	ND	ND	ND	ND
Carbazole	290	0.059 J	ND	0.034 J	0.11 J	ND	ND	ND	ND	ND
Di-n-butylphthalate	2,300	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorathene	21,000	ND	0.12 J	0.082 J	ND	ND	ND	0.17 J	0.13 J	ND
Pyrene	21,000	ND	0.13 J	0.11 J	ND	0.36 J	ND	0.17 J	0.14 J	ND
Benzo(a)anthracene	8	ND	0.058 J	0.056 J	ND	0.2 J	ND	0.089 J	0.075 J	ND
Benzo(k)fluoranthene	78	ND	0.053 J	ND	ND	0.07 J	ND	0.097 J	0.075 J	ND
Benzo(a)pyrene	0.8	ND	0.062 J	ND	ND	0.1 J	ND	0.1 J	0.083 J	ND

Table 2-10

SAMPLES X112 THROUGH X120
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X112	X113	X114	X115	X116	X117	X118	X119	X120
Indeno(1,2,3-cd)pyrene	8	0.26 J	0.032 J	ND	ND	ND	ND	0.079 J	0.054 J	ND
Dibenz(a,h)anthracene	0.8	0.1 J	ND	ND	ND	ND	ND	0.033 J	0.025 J	ND
Benzo(g,h,i)perylene	16,000	ND	ND	ND	ND	ND	ND	0.082 J	0.062 J	ND
Pesticides										
Alpha-BHC	0.0025	ND	ND	0.001 JP	ND	ND	ND	ND	0.000059 JP	ND
Beta-BHC	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC	NP	0.00068 JP	ND	0.00032 JP	0.0002 JP	ND	ND	ND	ND	ND
Gamma-BHC	0.045	ND	ND	ND	ND	ND	ND	0.000092 JP	ND	ND
Heptachlor	1	0.0026 P	0.0002 JP	0.0008 JP	0.00071 JP	0.0006 JP	0.00017 JP	ND	ND	ND
Aldrin	0.3	0.0056 P	0.00078 JP	0.001 JP	0.0028 P	0.001 J	0.00058 JP	ND	ND	ND
Endosulfan I	18	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	0.6	ND	0.00028 JP	ND	ND	ND	ND	0.00043 JP	0.00054 JP	0.00054 JP
Dieldrin	0.02	ND	ND	ND	ND	ND	ND	ND	0.00066 JP	ND
4,4'-DDE	17	ND	ND	0.0011 JP	ND	ND	ND	ND	ND	ND

Table 2-10

SAMPLES X112 THROUGH X120
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X112	X113	X114	X115	X116	X117	X118	X119	X120
4,4'-DDD	24	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	17	ND	ND	ND	ND	ND	ND	0.00031 J	0.00026 J	ND
Endrin	5	0.0098 PB	ND	ND	0.0056 PB	ND	ND	ND	ND	ND
Endosulfan II	18	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	NP	0.013 P	ND	ND	0.017 P	ND	ND	0.0027 JP	0.00058 JP	0.00031 JP
Endrin aldehyde	NP	0.00056 JP	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-chlordane	4	ND	ND	ND	ND	ND	ND	ND	ND	ND
Gamma-chlordane	4	0.00017 J	0.00033 JP	0.00044 JP	0.0012 JP	0.00026 JP	ND	ND	0.000086 JP	ND
Inorganics										
pH		6.4	7.5	4.0	7.0	7.2	7.8	7.0	7.5	7.6
Aluminum	NP	5,390	7,920	1,320	4,270	9,840	16,200	9,410	13,100	12,300
Antimony	pH based	7.2 B	5.1 B	ND	12.0 B	4.5 B	ND	3.0 B	ND	ND
Arsenic	24	19.4	20.4	4.1	1.6 B	28.4	37.1	22.5	8.2	7.6

Table 2-10

SAMPLES X112 THROUGH X120
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X112	X113	X114	X115	X116	X117	X118	X119	X120
Barium	pH based	539	686	4.7 B	94.1 B	48.9	92.5	243	62.2	40.8 B
Beryllium	8.2	1.9	2.5	0.16 JB	1.5	2.3	1.0 JB	2.1	1.1 B	0.85 JB
Cadmium	pH based	0.44 JB	ND	ND	0.31 JB	ND	39.1	2.5	ND	ND
Chromium	420	21.8	28.3	2.4 J	13.6	19.4	27.1	18.1	21.3	20.6
Cobalt	12,000	7.6	10.4	1.2 B	19.6	16.9	15.9	9.8 B	11.9	13.6
Copper	pH based	272	762	2.9 JB	544	78.8	56.1	243	34.2	25.3
Iron	pH based	48,100	35,900	3,180	91,100	73,100	27,400	22,000	25,500	22,500
Lead	647	1,260 J	1,460 J	684 J	9.7 J	908 J	111 J	1,210 J	110 J	15.4 J
Magnesium	NP	1,380 J	495	2,050	2,450	11,400	6,610	8,290	4,980	18,800
Manganese	8,700	208 J	253 J	54.7 J	596 J	742 J	228 J	403 J	427 J	409 J
Mercury	0.99	1.1	1.1	ND	1.4	ND	ND	1.1	ND	ND
Nickel	pH based	22.6	13.4	2.6 B	38.3	43.2	131	33.6	28.6	30.1
Selenium	pH based	3.5 J	2.7 J	1.3 J	ND	3.2 J	1.4 J	ND	ND	ND
Silver	1,000	1.2 JB	1.6 JB	ND	1.1 JB	ND	ND	20	ND	ND


Table 2-10

**SAMPLES X112 THROUGH X120
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996**

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X112	X113	X114	X115	X116	X117	X118	X119	X120
Thallium	pH based	ND	ND	ND	ND	1.4 B	1.9 B	ND	ND	ND
Vanadium	1,400	28.5	42.9	4.4 B	29.3	42.1	32	24.3	27.4	22.9
Cyanide	pH based	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	pH based	328 J	142 J	10.4 J	1,040 J	266 J	2,070 J	642 J	103 J	59.2 J

Key:

mg/kg	=	Milligram per kilogram.
ND	=	Analyte was not detected.
B	=	Analyte was detected in associated blank.
J	=	Estimated value.
P	=	A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.
E	=	Compound exceeds the calibration range of the instrument.
Cleanup Objective	=	Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.
NP	=	Cleanup objective not provided or not calculated.
	=	Shaded area represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency.

Table 2-11

SAMPLES X121 THROUGH X129
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X121	X122	X123	X124	X125	X126	X127	X128	X129
Depth		3 feet	5 feet	5 feet	6 feet	5 feet	6, 5, 7 feet	6 inches	5 feet	3 feet
Volatiles										
Acetone	16	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	9	ND	0.033 J	0.003 J	0.003 J	0.002 J	0.002 J	0.002 J	0.008 J	0.002 J
Methylene chloride	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.54	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 Dichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	0.028	ND
2 Butanone	NP	ND	ND	ND	ND	ND	ND	ND	0.006 J	ND
1,1,1 Trichloroethane	10	ND	ND	0.002 J	ND	0.002 J	ND	0.008 J	ND	0.002 J
Carbon tetrachloride	0.35	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.3	ND	ND	ND	0.002 J	ND	ND	ND	ND	ND
Tetrachloroethene	0.3	ND	ND	0.02	0.02	0.024	0.011 J	0.002 J	ND	ND
1,1,2,2 Tetrachloroethane	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	19	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	30	ND	ND	0.007 J	ND	0.023	0.018	0.09	0.057 B	0.041
Xylene	190	ND	ND	ND	ND	ND	ND	0.001 J	0.006 J	ND

Table 2-11

SAMPLES X121 THROUGH X129
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X121	X122	X123	X124	X125	X126	X127	X128	X129
Semivolatiles										
Phenol	100	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	15	ND	ND	ND	ND	ND	ND	ND	ND	0.038 J
4-Methylphenol	NP	ND	ND	ND	ND	ND	ND	0.054 J	0.027 J	0.096 J
2,4-Dimethylphenol	9	ND	ND	ND	ND	ND	ND	0.032 J	ND	ND
Nitrobenzene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	780	0.04 J	7.7 J	ND	0.16 J	0.052 J	ND	0.14	3.6 D	5.3 D
Bis(2-ethylhexyl)phthalate	410	0.048 J	ND	ND	ND	ND	0.031 J	ND	ND	0.047 J
Benzo(b)fluorathene	8	ND	6.6 J	0.14 J	0.12 J	ND	ND	14 D	3.6 D	4.2 D
Napthalene	130	ND	ND	0.073 J	0.32 J	ND	0.031 J	0.76	0.47	2.8 DJ
2-Methylnaphthalene	145	0.029 J	ND	0.078 J	0.53 J	0.071 J	0.045 J	0.36	0.38 J	1
Acenaphthylene	75	ND	3 J	0.021 J	ND	ND	ND	0.48	0.14 J	0.46
Acenaphthene	2,800	ND	ND	ND	ND	ND	ND	1.5	0.47	1.6
Dibenzofuran	NP	ND	4.1 J	0.025 J	0.16 J	0.021 J	ND	0.77	0.38 J	1.3
Fluorene	2,800	ND	5.5 J	ND	ND	ND	ND	1.5	0.56	1.8
4-Nitroaniline	NP	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 2-11

SAMPLES X121 THROUGH X129
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X121	X122	X123	X124	X125	X126	X127	X128	X129
N-Nitrosodiphenylamine	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	700	0.1 J	13 JB	0.19 J	0.45 J	0.43	0.25 J	17 D	3.3 D	12 D
Anthracene	60,000	ND	3 J	0.026 J	0.039 J	0.027 J	ND	4.3 D	1.2	2.6 D
Carbazole	290	ND	ND	ND	ND	ND	ND	1.8	0.58	1.5
Di-n-butylphthalate	2,300	ND	ND	ND	ND	ND	ND	ND	ND	0.061 J
Fluoranthene	21,000	ND	15 J	0.15 J	0.16 J	0.066 J	0.048 J	28 D	5.4 D	11 D
Pyrene	21,000	0.032 J	17 J	0.16 J	0.18 J	0.073 J	0.045 J	25 D	6.1 D	10 D
Benzo(a)anthracene	8	ND	5.3 J	ND	0.1 J	0.04 J	ND	13 D	3.2 D	4.8 D
Benzo(k)fluoranthene	78	ND	5.1 J	0.094 J	0.066 J	ND	ND	8.9 D	2.3	2.2
Benzo(a)pyrene	0.8	ND	6.7 J	0.1 J	0.084 J	0.022 J	ND	12 D	3.7	4.2 D
Indeno(1,2,3-cd)pyrene	8	ND	5.2 J	0.11 J	0.067 J	ND	ND	7.3 D	2.6	2.8 D
Dibenz(a,h)anthracene	0.8	ND	ND	0.028 J	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	16,000	0.53 J	6.4 J	0.12 J	0.21 J	ND	ND	6.9 B	3	2.8 D
Pesticides										
Alpha-BHC	0.0025	ND	0.18 P	ND	0.000098 JP	ND	ND	ND	ND	ND
Beta-BHC	NP	ND	ND	0.00031 JP	ND	0.00025 J	ND	ND	ND	ND

Table 2-11

SAMPLES X121 THROUGH X129
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X121	X122	X123	X124	X125	X126	X127	X128	X129
Delta-BHC	NP	0.00018 J	ND	ND	ND	0.00015 JP	0.00048 JP	ND	ND	ND
Gamma-BHC	0.045	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	1	ND	ND	0.0006 JP	ND	0.00012 JP	ND	ND	ND	ND
Aldrin	0.3	0.00025 JP	0.071 P	0.0022 P	0.0013 JP	0.0064 P	0.0014 JP	0.0018 P	0.0032 P	0.0049 JP
Endosulfan I	18	0.0004 JP	0.0088 JP	0.0096 DJP	ND	0.00082 JP	0.00019 JP	0.0014 JP	0.0011 JP	0.011 J
Heptachlor epoxide	0.6	0.00021 JP	0.069	0.001 JP	0.00098 JP	0.0001 JP	0.00064 JP	0.0041 P	0.0037 P	0.0059 JP
Dieldrin	0.02	ND	0.025 JP	0.0048 DJP	ND	0.0023 JP	0.00047 JP	0.0088 P	0.014	0.0054 JP
4,4'-DDE	17	ND	0.0098 J	0.062 DP	ND	ND	ND	0.0036 P	0.0016 JP	30 P
4,4'-DDD	24	ND	ND	0.0062 P	ND	ND	ND	0.00056 JP	0.00031 JP	0.00016 JP
Endosulfan sulfate	NP	ND	0.025 JP	0.015 P	ND	ND	ND	ND	ND	0.0016 JP
4,4'-DDT	17	ND	0.21	0.39 D	0.001 JP	ND	ND	0.015 P	0.0082 P	0.130
Endrin	5	0.00032 JP	0.46	0.017	ND	0.045 JP	0.00076 JP	0.0082 P	0.0041 JP	0.024 J
Endosulfan II	18	ND	ND	ND	ND	ND	ND	0.00036 JP	0.00039 JP	0.001 JP
Endrin ketone	NP	0.00047 JP	0.16	0.0049 P	0.00087 JP	0.003 JP	0.0007 JP	0.018 P	0.0098 P	0.03
Endrin aldehyde	NP	ND	ND	0.0013 JP	ND	ND	ND	ND	ND	ND
Alpha-chlordane	4	0.0054 JP	0.01 P	ND	ND	ND	ND	ND	ND	ND

Table 2-11

SAMPLES X121 THROUGH X129
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X121	X122	X123	X124	X125	X126	X127	X128	X129
Gamma-chlordane	4	0.000075 JP	0.0043 JP	0.0085 P	0.00012 JP	ND	ND	0.015 J	0.00017 JP	0.0091 J
Inorganics										
pH		7.2	5.3	7.7	6.8	6.2	7.1	7.5	7.1	7.4
Aluminum	NP	11,000	269	7,010	2,500	11,000	8,150	6,560	2,920	3,530
Antimony	pH based	3.3 B	ND	4.9 JB	5.4 B	ND	16.5 JB	3.6 J	16.7 J	7.8 B
Arsenic	24	4.6	ND	20.6	7.5	37.3	43.8	12.3	26.1	16.8
Barium	pH based	46.1	2.5	279	157	715	429	290	815	233
Beryllium	8.2	0.7 JB	ND	2.2	4.3	4.2	2.9	1.1	0.5 B	0.8 B
Cadmium	pH based	ND	ND	0.00084 B	0.00034 B	0.0018	0.0523	1.3	19.8	2.8
Chromium	420	20	ND	19.9	8.2	20.9	27.4	29.5	113	61.4
Cobalt	12,000	11.6	1.9 B	9.3 B	7.0 B	16.2	17.1	7.8 B	9.9 B	8.8 B
Copper	pH based	24.7	6.9 JB	296	71.2	260	2,180	214	1,830	136
Iron	pH based	21,100	5,930	26,000	9,520	32,200	110,000	26,800	94,200	38,700
Lead	647	14.8 J	30.3 J	1,040	724	160	491	915	10,700	599
Magnesium	NP	24,700	545	19,400	7,600	1,170 B	2,200	11,600	6,010	2,070
Manganese	8,700	365 J	34.4 J	359 J	78.5 J	477 J	622 J	384 J	765 J	319 J


Table 2-11

SAMPLES X121 THROUGH X129
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation								
		X121	X122	X123	X124	X125	X126	X127	X128	X129
Mercury	0.99	ND	ND	0.49	0.13 B	ND	0.44	1.8	2.8	0.23
Nickel	pH based	30.9	8.1 B	21.5	11.6 B	51.5	50.3	18.9	81.3	27.4
Selenium	pH based	ND	ND	1.2 J	2.6 J	1.7 J	1.6 J	0.85 JB	1.2 JB	1.4 J
Silver	1,000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	pH based	ND	ND	ND	ND	ND	2.0 B	ND	2.0 B	ND
Vanadium	1,400	22.9	ND	28.7	13.8	36.5	32.1	20.7	19.8	22.9
Cyanide	pH based	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	pH based	108 J	226 J	454 J	172 J	1,700 J	14,600 J	450 J	6,470 J	408 J

Key:

- mg/kg -- Milligram per kilogram.
 ND = Analyte was not detected.
 B = Analyte was detected in associated blank.
 J = Estimated value.
 P = A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.
 D = Identified analyte in analysis has been diluted.
 Cleanup Objective = Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.
 NP = Cleanup objective not provided or not calculated.
 = Shaded area represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency.

Table 2-12

SAMPLES X130 THROUGH X137
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X130	X131	X132	X133	X134	X135	X136	X137
Depth		6-7 feet	1 foot	1 foot	6-7 feet	3 feet	6 feet	2-2.5 feet	6 feet
Volatiles									
Acetone	16	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	9	0.002 J	0.003 J	0.002 J	ND	0.002 J	ND	0.002 J	0.016 J
Methylene chloride	0.2	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.54	ND	ND	ND	ND	ND	ND	0.003 J	ND
1,2-Dichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NP	ND	ND	ND	ND	ND	ND	ND	0.045
1,1,1-Trichloroethane	10	ND	0.009 J	0.003 J	ND	0.003 J	ND	0.009 J	ND
Carbon tetrachloride	0.35	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.3	ND	ND	ND	ND	ND	ND	0.006 J	ND
Tetrachloroethene	0.3	ND	0.011 J	ND	0.007 J	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NP	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	19	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	30	0.006 J	0.021	0.007 J	0.0019	0.032	0.007 J	0.13	0.018 J
Xylene	190	ND	ND	ND	ND	ND	ND	ND	ND

Table 2-12

SAMPLES X130 THROUGH X137
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X130	X131	X132	X133	X134	X135	X136	X137
Semivolatiles									
Phenol	100	0.25 J	ND	ND	ND	ND	ND	0.068 J	0.13 J
2-Methylphenol	15	0.13 J	ND	ND	ND	ND	ND	0.047 J	0.096 J
4-Methylphenol	NP	0.27 J	0.039 J	ND	ND	ND	0.062 J	0.13 J	0.24 J
2,4-Dimethylphenol	9	0.26 DJ	0.048 J	ND	ND	ND	ND	ND	0.11 J
Nitrobenzene	0.1	ND	ND	ND	ND	0.1 J	ND	ND	ND
Chrysene	780	4.6 D	8.3 D	3.8 D	0.18 J	0.48	0.91	0.96	1.8
Bis(2-ethylhexyl)phthalate	410	0.049 J	0.063 J	0.039 J	ND	ND	ND	ND	ND
Benzo(b)fluorathene	8	2.9	8.6 D	4.4 D	0.13 J	0.16 J	0.66	0.39	0.59
Napthalene	130	0.35 J	0.32 J	0.18 J	ND	0.28 J	0.32 J	0.36 J	0.28 J
2-Methylnapthalene	145	0.68	0.42 J	0.17 J	ND	0.69	0.28 J	0.85	0.71
Acenaphthylene	75	0.028 J	2.4	1.2	0.025 J	ND	0.078 J	ND	0.097 J
Acenaphthene	2,800	0.26 J	0.25 J	0.12 J	ND	ND	0.067 J	ND	0.09 J
Dibenzofuran	NP	0.25 J	0.38 J	0.18 J	ND	0.51	0.24 J	0.46	0.17 J
Fluorene	2,800	0.39 J	0.25 DJ	0.15 J	ND	ND	0.16 J	ND	0.11 J
4-Nitroaniline	NP	0.11 J	ND	ND	ND	ND	ND	ND	7.3 DJ

Table 2-12

SAMPLES X130 THROUGH X137
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X130	X131	X132	X133	X134	X135	X136	X137
N-nitrosodiphenylamine	1	ND	ND	ND	ND	ND	ND	0.21 J	ND
Phenanthrene	700	3.6	2.8	1.1	0.13 J	2.1	1.4	2.2	2.1
Anthracene	60,000	0.68	2.8	1.4	0.036 J	0.099 J	0.26 J	0.24 J	0.35 J
Carbazole	290	0.38 J	0.31 J	0.15 J	ND	0.053 J	0.1 J	0.075 J	0.12 J
Di-n-butylphthalate	2,300	ND	ND	ND	0.056 J	ND	ND	ND	ND
Fluoranthene	21,000	3	7.5 D	3.4 D	0.13 J	0.46	1.4	0.72	1.3
Pyrene	21,000	3.2	8.8 D	4 D	0.16 J	0.61	1.4	0.74	1.3
Benzo(a)anthracene	8	3.1	8.6 D	4 D	0.14 J	0.32 J	0.77	0.53	0.79
Benzo(k)fluoranthene	78	1 D	7.1 D	3.2	0.1 J	0.25 J	0.52 J	0.32 J	0.66
Benzo(a)pyrene	0.8	1.9	7.6 D	3.6 D	0.11 J	0.22 J	0.6 J	0.22 J	0.46 DJ
Indeno(1,2,3-cd)pyrene	8	1	5.1 D	2.4	0.078 J	0.12 J	0.4 J	0.22 J	0.46 DJ
Dibenz(a,h)anthracene	0.8	0.98	ND	ND	0.025 J	0.086 J	ND	0.2 J	0.35 J
Benzo(g,h,i)perylene	16,000	1.5	5.3 D	2.4 D	0.13 J	0.14 J	0.46 J	0.3 J	0.64 DJ
Pesticides									
Alpha-BHC	0.0025	ND	ND	ND	ND	ND	ND	ND	0.00084 JP
Beta-BHC	NP	ND	ND	ND	ND	ND	ND	ND	ND

Table 2-12

SAMPLES X130 THROUGH X137
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X130	X131	X132	X133	X134	X135	X136	X137
Delta-BHC	NP	0.00035 J	ND	0.00027 JP	ND	ND	0.00043 JP	0.0009 J	ND
Gamma-BHC	0.045	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	1	0.0015 JP	ND	ND	ND	0.0051 P	ND	0.0036 JP	0.0036 JP
Aldrin	0.3	0.0069 P	ND	0.0015 JP	0.00082 J	0.024 P	0.00058 JP	0.01 JP	0.02 J
Endosulfan I	18	0.00047 JP	ND	0.0014 JP	0.00056 J	0.0068 P	ND	0.0047 JP	ND
Heptachlor epoxide	0.6	0.0074	0.0041 JP	0.0028 P	0.00058 JP	0.0064 P	0.0036 P	0.0076 JP	0.012 JP
Dieldrin	0.02	0.001 JP	0.032 JP	0.021	0.0006 JP	0.00072 JP	0.0011 JP	0.037 JP	0.0058 JP
4,4'-DDE	17	0.00056 JP	0.0048 JP	0.0012 JP	ND	ND	ND	0.002 JP	0.0058 JP
4,4' DDD	24	ND	ND	ND	ND	0.002 JP	0.00037 JP	ND	0.0038 JP
Endosulfan sulfate	NP	0.00093 JP	0.00015 JP	ND	ND	ND	ND	ND	ND
4,4'-DDT	17	0.037 P	0.088	0.0036 JP	ND	0.0079 P	0.00068 JP	ND	0.15
Endrin	5	0.00056 JP	0.13 P	0.0038 JP	0.00051 JP	0.021	0.0025 JP	0.014 JP	0.21
Endosulfan II	18	ND	ND	ND	ND	ND	ND	ND	0.0024 JP
Endrin ketone	NP	0.031 P	0.087	0.0099 P	0.00087 JP	0.015 P	ND	0.028 JP	0.14 P
Endrin aldehyde	NP	ND	0.0011 JP	0.00075 JP	ND	ND	ND	ND	ND
Alpha-chlordane	4	0.00019 JP	ND	ND	ND	ND	ND	ND	ND

Table 2-12

SAMPLES X130 THROUGH X137
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X130	X131	X132	X133	X134	X135	X136	X137
Gamma-chlordane	4	0.0012 JP	0.0014 JP	0.00027 JP	ND	0.0046 P	ND	0.0042 J	ND
Inorganics									
pH		7.2	7.3	7.3	7.6	6.3	7.1	7.3	6.9
Aluminum	NP	2,820	8,260	8,710	12,200	2,130	4,730	2,400	14,000
Antimony	pH based	13.5 B	3.9 B	5.5 JB	ND	18.2 J	52.5 J	7.8 JB	8.9 JB
Arsenic	24	10.8	9.6	10.2	14.9	51.3	69.3	26.6	3.5 B
Barium	pH based	176	120	230	41.5 B	40.1 B	2,860	646	55.8 B
Beryllium	8.2	0.32 B	1.7	1.2 B	0.76 B	0.8 B	0.46 B	0.83 B	0.93 B
Cadmium	pH based	1.0 B	1.5	1.8	ND	ND	28.3	5.8	1.3 B
Chromium	420	30.9	22	27.4	20.5	10.6	225	81.2	24
Cobalt	12,000	8.6	6.2 B	7.2 B	32.3	33	11.1 B	9.9 B	11.2 B
Copper	pH based	244	89.5	79.6	31	150	1,130	1,300	37.1
Iron	pH based	64,900	26,900	26,500	27,300	184,000	77,100	52,900	20,600
Lead	647	699	578	550	19.6	95.2	17,000	3,780	23.4
Magnesium	NP	2,490	5,360	5,240	23,200	753 B	10,300	1,850	5,460
Manganese	8,700	281 J	423 J	506 J	713 J	474 J	405 J	286 J	153 J


Table 2-12

SAMPLES X130 THROUGH X137
HISTORICAL ON-SITE SOIL ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
CHICAGO, ILLINOIS
JULY 16-17, 1996

Units = mg/kg

Parameter	Cleanup Objective	Sample Designation							
		X130	X131	X132	X133	X134	X135	X136	X137
Mercury	0.99	1.4	0.46	0.61	ND	0.07 B	0.13 B	1.8	11.9
Nickel	pH based	30.8	18.3	19.7	39.6	52.2	30.5	22.1	33.6
Selenium	pH based	4.1 J	1.9 J	2.0	0.92 BJ	2.4 J	4.8 J	2.5 J	1.6 JB
Silver	1,000	ND	ND	ND	ND	ND	19.3	ND	178
Thallium	pH based	ND	ND	ND	ND	4.7	ND	ND	ND
Vanadium	1,400	27.3	26	24.3	27.7	32.4	24.4 B	18.8	32.2
Cyanide	pH based	ND	0.6 JB	ND	ND	ND	ND	ND	ND
Zinc	pH based	980 J	300 J	314 J	61.7 J	101 J	10,800 J	2,380 J	1,080 J


Key:

mg/kg	=	Milligram per kilogram
ND	=	Analyte was not detected.
B	=	Analyte was detected in associated blank.
J	=	Estimated value.
P	=	A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.
D	=	Identified analyte in analysis has been diluted.
Cleanup Objective	=	Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.
NP	=	Cleanup objective not provided or not calculated.
	=	Shaded area represents analyte which exceeds cleanup objective.

Source: Illinois Environmental Protection Agency.

Table 2-13						
SAMPLES X126, X128, X135, AND X137						
HISTORICAL ON-SITE SOIL TCLP METAL ANALYTICAL RESULTS SUMMARY						
PULLMAN/LIQUID DYNAMICS SITE						
JULY 1, 1997						
Units = mg/kg						
Parameter	Toxicity Characteristic	Cleanup Objective	Sample Designation			
			X126	X128	X135	X137
TCLP Metals						
Antimony	NP	0.024	ND	0.0039	ND	ND
Arsenic	5	0.2	ND	ND	0.005	ND
Barium	100	2.0	1.0	0.220	0.300	0.45
Beryllium	NP	0.5	ND	ND	ND	ND
Cadmium	1	0.05	0.59	0.320	0.006	0.45
Chromium	5	1.0	ND	ND	ND	ND
Lead	5	0.1	ND	112.0	0.067*	50.6*
Nickel	NP	2.0	0.122	0.75	0.033	0.140
Mercury	0.2	0.01	ND	ND	ND	ND
Selenium	1	0.05	ND	ND	ND	ND
Thallium	NP	0.02	ND	ND	ND	ND
Vanadium	NP	NP	ND	ND	ND	ND
Silver	5	NP	ND	ND	ND	ND

Key:

- mg/kg = Milligram per kilogram.
- ND = Analyte was not detected.
- * = Probable error with TCLP analyses of these two samples. It is probable that sample X135 is hazardous for lead and that sample X137 is not hazardous for lead.
- Cleanup Objective = Cleanup objectives were taken from the IEPA's Tiered Approach to Cleanup Objectives Guidance Document.
- NP = Not provided by cleanup objective, not provided by toxicity characteristic, or not calculated.
-  = Shaded area represents analyte which exceeds toxicity characteristic.

Source: Illinois Environmental Protection Agency.

Table 2-14					
SAMPLES G101 THROUGH G104					
HISTORICAL ON-SITE GROUNDWATER ANALYTICAL RESULTS SUMMARY					
PULLMAN/LIQUID DYNAMICS SITE					
JULY 1, 1997					
Units = mg/L.					
Parameter	Groundwater Cleanup Objective	Sample Designation			
		G101	G102	G103	G104
Polyaromatic Hydrocarbons					
Diethylphthalate	5.6	0.003 J	ND	ND	ND
Fluorene	1.4	ND	ND	ND	0.001 J
Phenanthrene	NP	ND	ND	ND	0.0006 J
Fluoranthene	1.4	ND	ND	ND	0.001 J
Pyrene	1.05	ND	ND	ND	0.001 J
Benzo(a)anthracene	0.00065	ND	ND	ND	0.0006 J
Chrysene	0.0075	ND	ND	ND	0.0007 J
Bis(2-Ethylhexyl)phthalate	0.06	0.01 JB	0.01 JB	0.01 JB	0.01 JB
Di-n-butylphthalate	3.5	ND	0.0007 J	ND	ND
Benzo(b)fluoranthene	0.0009	ND	ND	ND	0.0006 J
Benzo(a)pyrene	0.002	ND	ND	ND	0.0006 J
Pesticides					
Alpha-BHC	0.00015	ND	ND	ND	0.000004 JP
Beta-BHC	NP	ND	ND	ND	0.000014 JP


Table 2-14

SAMPLES G101 THROUGH G104
HISTORICAL ON-SITE GROUNDWATER ANALYTICAL RESULTS SUMMARY
PULLMAN/LIQUID DYNAMICS SITE
JULY 1, 1997

Units = mg/L.

Parameter	Groundwater Cleanup Objective	Sample Designation			
		G101	G102	G103	G104
Metals					
Aluminum	NP	ND	ND	0.0247 B	0.061.2 JB
Arsenic	0.2	ND	0.0041 B	0.0041 B	ND
Barium	2	0.0992 B	0.0489 B	0.0489 B	0.0182 B
Cadmium	0.05	ND	0.162	0.149	ND
Cobalt	1	ND	0.018 B	0.0173 B	ND
Copper	0.65	0.005 JB	0.0888	0.0732	ND
Iron	5	3.13	4.86	4.47	9.84
Lead	0.1	0.0142 J	0.0039 J	0.0036 J	0.0054 J
Magnesium	NP	79.7	254	232	65.9
Manganese	10	0.413	2.68	2.440	0.357
Mercury	0.01	0.00011 B	ND	0.00011 B	ND
Nickel	2	ND	0.434	0.395	0.0069 B
Vandium	NP	ND	ND	0.0027 JB	0.0027 JB
Zinc	10	0.044	2.73	2.52	0.262

Key

mg/L	=	Miligram per liter
ND	=	Analyte was not detected
NP	=	Not provided in groundwater cleanup objectives or not calculated
B	=	Analyte was detected in associated blank
J	=	Estimated value
P	=	A pesticide/Aroclor analyte when there is a greater than 25% difference for the detected concentration between the two columns. The lower of the two values is reported.
	=	Shaded area represents analyte which exceeds groundwater objectives.

Source: Illinois Environmental Protection Agency.

3. Site Assessment

The site assessment is based on the historic findings of IEPA site assessment activities on the southern lot on August 23, 1995, and February 16, 1996, and the northern lot on July 16 and 17, 1996; and U.S. EPA site assessment activities on August 1, 1997, conducted by START under TDD S05-9707-012.

A considerable body of analytical data exists from these site assessment activities. Tables 2-2 through 2-8 summarize historical soil and groundwater sampling results for the southern lot. Figure 2-4 depicts the approximate locations where samples were collected in previous studies at the southern lot. Tables 2-9 through 2-14 summarize historical soil and groundwater sampling results for the northern lot. Figure 2-5 depicts the approximate locations where samples were collected in previous studies at the northern lot. This soil data appears to have focused on establishing the existence of highly contaminated soils on site.

Significant historical use data is available through the Sanborn maps. This data was reviewed to determine possible contaminants by historic use. The results of the review follow.

Southern Lot

The southern lot is composed of multiple parcels of land. Some parcels have had multiple property owners, and each property owner has used their property for different industrial purposes. As each parcel has had a distinct and potentially different multiple use, the contaminants of concern will vary from parcel to parcel.

A portion of Parcel 33, the area west of the former parking lot, is suspected to have been associated with the activities on Parcel 32. Therefore, this area west of the former parking lot on Parcel 33 will be included with Parcel 32 for the purposes of this site assessment.

The following is a listing, by location, of the potential contaminants of concern resulting from historic use:

Off site

Use. The site is located in an urban area with a historical mixed use of industrial, commercial, and residential areas. Sherwin-Williams operated a paint manufacturing plant to the south of the southern lot.

Approximately 0.5 mile from the site, to the east, is the Calumet Expressway. The site has been filled with cinder, slag, ash, and debris to accommodate development.

Contaminants of Potential Concern by Historical Use. The components in paints are solvents, binders, pigments, curing catalysts, and thinners. These solvents and thinners are composed of aromatics, such as toluene, xylene, ketones, phenol, methylene chloride, and acetone. Pigments, binders, and curing catalysts can be composed of metals, such as arsenic, lead, cadmium, mercury, and antimony. Soils on site may have been contaminated by airborne deposition of emissions from the Sherwin-Williams plant.

Leaded fuels were commonly used during the time in which the Calumet Expressway was built and used. Exhaust from leaded fuels contains lead and may have contaminated the soil by airborne deposition.

The fill is composed of slag, cinders, and ash. Ash can contain many contaminants based on the fuel burned. Ash may contain polyaromatic hydrocarbons (PAHs), sulfides, and metals, such as aluminum, calcium, iron, magnesium, potassium, and sodium. Other possible components of fly ash are furans and dioxins.

Parcel 31

Use. Previously used for painting and storage of railcars and subsequently used as a waste treatment facility.

Contaminants of Potential Concern by Historical Use. The wastewater treatment facility accepted primarily aqueous-based waste products generated by paint, coatings, adhesives, food, health and beauty care, chemical processing, metal finishing, and other related industries. Possible components of these wastes are volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, and pesticides.

The components in paints are solvents, binders, pigments, curing catalysts, and thinners. These solvents and thinners are composed of aromatics, such as toluene, xylene, ketones, phenol, methylene chloride, and acetone. Pigments, binders, and curing catalysts can be composed of metals, such as arsenic, lead, cadmium, mercury, and antimony.

Parcel 32

Use. Previously used for the storage and operations of painting railcars.

Contaminants of Potential Concern by Historical Use. The components in paints are solvents, binders, pigments, curing catalysts, and thinners. These solvents and thinners are composed of aromatics, such as toluene, xylene, ketones, phenol, methylene chloride, and acetone. Pigments, binders, and curing catalysts can be composed of metals, such as arsenic, lead, cadmium, mercury, and antimony.

Parcel 34

Use. Previously used by sandblasting and scrap metal operations.

Contaminants of Potential Concern by Historical Use. The sandblasting operations removed paint. The components in paints are solvents, binders, pigments, curing catalysts, and thinners. These solvents and thinners are composed of aromatics, such as toluene, xylene, ketones, phenol, methylene chloride, and acetone. Pigments, binders, and curing catalysts can be composed of metals, such as arsenic, lead, cadmium, mercury, and antimony. The solvents and thinners will have volatilized from the dried paint surface.

Parcel 33

Use. Previously used by the former railcar painting facility as a parking lot.

Contaminants of Potential Concern by Historical Use. The lot was used as a former parking lot. Leaded fuels were commonly used during the time in which this parcel was used as a parking lot. Exhaust from leaded fuels contains lead and may have contaminated the soil.

Outlots A, B, and C

Use. Previously used by the former railcar painting facility for storage and staging of railcar transport, and is currently used as an active railroad.

Contaminants of Potential Concern by Historical Use. Railroad ties have historically been treated with creosote or pentachlorophenol (PCP). Dioxins and furans are trace components of PCP.

Northern Lot

This northern lot had one property owner, Pullman Palace Car Co., and had been used for a variety of industrial purposes associated with the construction of railcars. Each industrial activity was treated as a separate unit for the purposes of the site assessment. The following is a listing, by location, of the potential contaminants of concern resulting from historic use:

Cars Shops

Use. Previously used as railcar shops.

Contaminants of Potential Concern by Historical Use. Fuel may have been used on site in a generator for the powering of machinery. SVOCs are components of fuel.

Transfer Table

Use. Previously used by railcar shops to receive and send out railcars.

Contaminants of Potential Concern by Historical Use. Railroad ties have historically been treated with creosote or PCP. Dioxins and furans are trace components of PCP.

Wheel and Axle Shop

Historical Use. Previously used by railcar shops to manufacture wheels and axles. Lacquer spray booths were used in the shop. Wood shavings were encountered in the previous investigations. The shavings were stained, black, and oily and were found around a pipe leading into the ground. The pipe may indicate the presence of an underground storage tank.

Contaminants of Potential Concern by Historical Use. The tentatively identified compounds identified in this sample are possible components of fuel oil and creosote. Fuels for machinery may have been used, resulting in VOC contamination.

Storeroom

Historical Use. Previously used to store materials, including paints and oils, for the construction of the railcars.

Contaminants of Potential Concern by Historical Use. The components in paints are solvents, binders, pigments, curing catalysts, and thinners. These solvents and thinners are composed of aromatics, such as toluene, xylene, ketones, phenol, methylene chloride, and acetone. Pigments, binders, and curing catalysts can be composed of metals, such as arsenic, lead, cadmium, mercury, and antimony.

Equipment Room

Use. Previously used to store equipment for the construction of the railcars.

Contaminants of Potential Concern by Historical Use. This building was used for the storage of

equipment. No known contaminants.

Mattress and Carpet Facility

Use. Previously used as a mattress and carpet facility.

Contaminants of Potential Concern by Historical Use. This building was used for the storage of equipment. No known contaminants.

Upholstery Shop

Use. The upholstery shop contained a dry cleaning facility.

Contaminants of Potential Concern by Historical Use. Tetrachloroethene (TCE) is typical of the solvents used for dry cleaning. VOCs, other than TCE, are also used in the dry cleaning process.

Dry Cleaning Facilities

Use. There were two dry cleaning facilities on the northern lot. One facility was within the upholstery shop, as stated above. The other facility was east of the upholstery shop.

Contaminants of Potential Concern by Historical Use. Tetrachloroethene is typical of the solvents used for dry cleaning. VOCs, other than TCE, are also used in the dry cleaning process.

Engineering Room

Use. Previously used as an engineering room.

Contaminants of Potential Concern by Historical Use. No known contaminants were identified.

Boiler Room

Use. Previously used as a boiler room.

Contaminants of Potential Concern by Historical Use. Previously use as a boiler room, the room was constructed of fireproof materials, as identified on the Sanborn maps. The Pullman Palace Car Co., had used asbestos in other locations in operations. The identification of the room as fireproof, and the presence of asbestos at other locations within the operations, indicate that asbestos may have been use in the boiler room.

Former track location

Use. Previously used for the transport of railcars.

Contaminants of Potential Concern by Historical Use. Railroad ties have historically been treated with creosote or PCP. Dioxins and furans are trace components of PCP.

4. Analytical Results

The analytical data from the IEPA site assessment activities on the southern lot on August 23, 1995, and February 16, 1996, and the northern lot on July 16 and 17, 1996; and the U.S. EPA site assessment activities on August 1, 1997, conducted by START under TDD S05-9707-012, were compared to the Illinois Pollution Control Board Tier II cleanup objectives. The following are the results of this comparison.

Southern Lot

Parcel 31

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives included: SVOCs- benzo(b)fluorathene, benzo(a)anthracene, benzo(k)fluorathene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene and benzo(g,h,i)perylene; pesticides- delta-BHC, heptachlor, aldrin, heptachlor epoxide, and dieldrin; and metals- arsenic, beryllium, and lead.

Parcel 32

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives included: SVOCs- benzo(a)fluorathene, benzo(a)anthracene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene; and metals- arsenic, beryllium, and lead.

Parcel 34

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling above the Illinois Pollution Control Board Tier II Cleanup objectives were metals: antimony, arsenic, beryllium, and lead; and SVOCs- benzo(a)pyrene.

Parcel 33

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives were metals: arsenic and beryllium.

Outlots A, B, and C

Contaminants of Potential Concern by Historical Sampling. One contaminant, arsenic, was identified in historical sampling as exceeding the Illinois Pollution Control Board Tier II cleanup objectives.

Northern Lot

Cars Shops

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives included: SVOCs- benzo(b)fluorathene, benzo(a)anthracene, benzo(a)pyrene, nitrobenzene; pesticide- dieldrin; and metals- arsenic, lead, and mercury.

Transfer Table

Contaminants of Potential Concern by Historical Sampling. One contaminant identified in the historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives was lead.

Wheel and Axle Shop

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives included: VOC- tetrachloroethene; SVOCs- nitrobenzene and benzo(a)pyrene; pesticide- dieldrin; and metals- barium, lead, and mercury.

Storeroom

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives were the following metals: arsenic, lead, and mercury.

Mattress and Carpet Facility

Contaminants of Potential Concern by Historical Sampling. One contaminant, lead, identified in historical sampling, exceeded the Illinois Pollution Control Board Tier II cleanup objectives.

Upholstery Shop

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives included a VOC- tetrachloroethene; and metals- lead, arsenic, and mercury.

Dry Cleaning Facilities

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives in the eastern dry cleaning facility were metals- lead, arsenic, and mercury; and a VOC, tetrachloroethene.

Former Track Location

Contaminants of Potential Concern by Historical Sampling. Contaminants identified in historical sampling that exceeded the Illinois Pollution Control Board Tier II cleanup objectives were metals- lead, arsenic, and mercury; and SVOCs- benzo(b)fluoranthene, benzo(a)anthracene, and benzo(a)pyrene.

5. Discussion of Potential Threats

Conditions observed during the U.S. EPA and IEPA investigations of the Pullman/Liquid Dynamic site that constitute a threat to human health and/or the environment, and may be used to determine the appropriateness of a removal action, as outlined in Section 300.415 (b)(2) of the National Contingency Plan (NCP), included:

- **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or contaminants.** The potential exists for trespassers to come in contact with the material sampled. Numerous signs of trespassers on site were documented during the August 1, 1997, site assessment activities. Many of the historical soil samples were collected from the surface, within the top 6 inches of the soil. Surface soil samples represent the soil open to contact with trespassers.

The contaminants of concern exceeding the Illinois Pollution Control Board Tier II cleanup objectives are: VOC- tetrachloroethene (TCE); SVOCs-benzo(b)fluoranthene, benzo(a)anthracene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, dibenz(a,h)anthracene, nitrobenzene, pentachlorophenol; pesticides- heptachlor, aldrin, heptachlor epoxide, dieldrin; and metals- antimony, arsenic, barium, cadmium, beryllium, lead, and mercury.

According to the "Toxological Profile for PAHs", published by the Agency for Toxic Substances and Disease Registry (ATSDR) in October 1993, SVOCs that are PAHs, benzo(b)fluoranthene, benzo(a)anthracene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, dibenz(a,h)anthracene, may cause skin cancer through inhalation and dermal contact. Benzo(a)pyrene may cause low fetal birth weight and fetal malformations.

According to the "Toxological Profile for Nitrobenzene", published by ATSDR in December 1990, direct contact with small amounts of nitrobenzene to the skin or eyes may cause mild irritation. Repeat exposures to high concentrations of nitrobenzene can result in methemoglobinemia, a blood condition. Methemoglobinemia affects the ability of the blood to carry oxygen and may result in the following symptoms; skin turning bluish, nausea, vomiting, shortness of breath, headache, irritability, dizziness, weakness, drowsiness, coma, or death. Nitrobenzene may cause decreased fertility.

According to the "Toxological Profile for Tetrachloroethene", published by ATSDR in August 1995, a single exposure to high concentrations of TCE can result in the following

symptoms; dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Dermal contact with TCE may result in skin irritation. Exposure to high concentrations through inhalation may cause spontaneous abortions. TCE may be a carcinogen.

According to the "Toxological Profile for PCP", published by ATSDR in May 1994, short-term exposures to pentachlorophenol can cause harmful effects on the liver, kidneys, blood, lungs, nervous system, immune system, and gastrointestinal tract. Pentachlorophenol is possibly carcinogenic.

According to the "Toxological Profile for Aldrin/Dieldrin", published by ATSDR in May 1989, brief exposures at high levels can cause headache, dizziness, irritability, loss of appetite, nausea, muscle twitching, convulsions, loss of consciousness, and death.

According to the "Toxological Profile for Heptachlor/Heptachlor Epoxide", published by ATSDR in April 1993, inhalation of heptachlor may affect the nervous system, causing dizziness, fainting, or convulsions.

According to the "Toxological Profile for Arsenic", published by ATSDR in April 1993, ingestion at low levels can cause irritation of the stomach and intestines, decreased production of red and white blood cells, abnormal heart rhythm, blood-vessel damage, and impaired nerve functioning. Arsenic may cause low fetal birth weight, fetal malformations, and even fetal death. Long-term oral exposure may cause growths on the palms, soles, and torso. Arsenic can increase the cancer risk of liver, bladder, kidney, and lung cancer. Direct skin contact may result in redness and irritation of the skin. High doses of arsenic taken internally may cause nerve injury and death.

According to the "Toxological Profile for Barium", published by ATSDR in July 1992, ingestion of barium can cause difficulty in breathing, increased blood pressure, changes in heart rhythm, irritation, minor changes in blood, muscle weakness, change in nerve reflexes, swelling of the brain, and damage to the liver, kidney, heart, and spleen. Ingestion of large amounts of barium can cause paralysis or death.

According to the "Toxological Profile for Beryllium", published by ATSDR in December 1988, the primary organ that beryllium affects is the lungs. Inhalation of beryllium can lead to the development of inflammation or reddening and swelling of the lungs (Acute Beryllium Disease). Long-term exposure can lead to Chronic Beryllium Disease, resulting in shortness of breath, scarring of the lungs, and berylliosis (noncancerous growths in the lungs of humans). Both Acute and Chronic Beryllium Disease can be fatal. Direct contact with beryllium can cause noncancerous growths that ulcerate. Beryllium is presumed to have some cancer-causing potential in humans.

According to the "Toxological Profile for Cadmium", published by ATSDR in April 1993, inhalation of cadmium in high doses severely damages the lungs and can cause death. Lower inhalation doses can cause kidney disease. Other inhalation effects are lung damage and fragile bones. Ingestion of cadmium leads to stomach irritation, vomiting, and diarrhea. Cadmium may be carcinogenic.

According to the "Toxological Profile for Lead", published by ATSDR in April 1993, lead has been shown to affect virtually every organ in the body, both in humans and animals. The most sensitive targets appear to be the central nervous system (especially in children), the hematopoietic system, and the cardiovascular system. It may also adversely affect the kidney and the immune system. Exposure to lead is most dangerous for young and unborn children. Harmful effects include premature births, decreased mental abilities, learning difficulties, and reduced growth. In adults, lead may decrease reaction time; cause weakness in fingers, wrists, or ankles; and possibly affect memory. Lead may also cause anemia, abortion, and damage to the male reproductive system.

According to the "Toxological Profile for Mercury", published by ATSDR in May 1994, exposure to high levels of mercury can permanently damage the brain, kidneys, and the developing fetus. Symptoms include personality changes (irritability, shyness, nervousness), tremors, changes in vision or hearing, and difficulties in memory.

- **High levels of hazardous substances or pollutants or contaminants at or near the surface that may migrate.** High levels of multiple SVOCs and metals were detected in surface soil samples. Several of the areas with significant soil contamination were lacking vegetation. Large patches void of vegetation offer no hindrance to the migration of surface soils. The contaminants are likely to migrate through windblown deposition and surface runoff. The surface runoff is collected by inlets in the roadway and is treated by MSD.
- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.** Contaminated soil is directly exposed to the elements of wind, rain, and other weather conditions which can carry contaminants off site. Soil and dust carried by low winds was noted during the sampling activity.

6. Summary

It is recommended that actions be taken to mitigate the environmental and human health threats resulting from the presence of hazardous waste at the Pullman/Liquid Dynamics site. All hazards and sources of potential exposure should be removed. Additional sampling will further delineate removal costs and actions. Although a time-critical action is not deemed necessary, due to the evidence of trespassers on site and the ease to which hazardous materials can migrate off site, a non-time-critical action may be warranted.

Appendix A

Photodocumentation



SITE: Pullman/Liquid Dynamics

LOCATION: Chicago, IL

SUBJECT: START collects sample SAT-2.

DATE: August 1, 1997
DIRECTION: Northwest

TIME: 1220

PHOTOGRAPHER: C. Gebien



SITE: Pullman/Liquid Dynamics

LOCATION: Chicago, IL

SUBJECT: Sample SAT-3.

DATE: August 1, 1997
DIRECTION: East

TIME: 1230

PHOTOGRAPHER: C. Gebien



SITE: Pullman/Liquid Dynamics

LOCATION: Chicago, IL

SUBJECT: Evidence of trespassers on site.

DATE: August 1, 1997

DIRECTION: NA

TIME: 1258

PHOTOGRAPHER: C. Gebien



SITE: Pullman/Liquid Dynamics

LOCATION: Chicago, IL

SUBJECT: RPM Peterson begins collection of background sample SAT-6.

DATE: August 1, 1997

DIRECTION: NA

TIME: 1300

PHOTOGRAPHER: C. Gebien